UNIVERSITY OF LIVERPOOL

Examining the role of individual differences in mock jurors' note taking during trials and recall of trial evidence

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Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy by Joanna Lorek

May 2019

Abstract

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Although note taking has been consistently shown to improve jurors' memory of trial evidence, no research has investigated the kind of individual differences that may either hinder or facilitate how much jurors are able to note down and recall. The principal aim of this thesis was to investigate the effects of individual differences on juror note taking during trials and recall of trial evidence.

The first study, presented in Chapter 4, explored the associations between jurors' handwriting speed, note taking during trials, and recall of trial information. The results showed that handwriting speed was positively associated with the amount of notes taken. Additionally, handwriting speed was positively associated with the amount of information recalled, with a mediation analysis showing this was through the amount of notes taken. Next, Chapter 5 focused on individual differences in short-term memory, working memory, and information processing ability. The results showed that short-term memory capacity was positively associated with the amount of notes jurors took. Further, short-term memory capacity was also associated with recall, with mediation analysis again showing this was via the amount of notes taken. However, neither working memory or information processing ability were significantly associated with the amount of information jurors noted down during the trial and subsequently recalled.

Further, Chapter 6 studied individual differences in sustained and divided attention. Sustained attention, but not divided attention, was found to be positively associated with the amount of notes taken. Additionally, sustained attention was positively associated with the amount of trial information jurors recalled, and this was via the amount of notes taken. Next, Chapter 7 examined the impact of individual differences in prior trial experience on note taking and recall. Prior experience was found to enhance the amount of notes jurors take, however there were no differences in the amount of information recalled.

In addition, the secondary aim of this thesis was to explore the association between the type of evidence jurors' predominantly recall and the verdicts they reach. The first three studies (Chapters 4, 5, and 6) investigated this with a criminal trial. All studies found that jurors who recalled more incriminating evidence were more likely to reach a guilty verdict whereas those who recalled more non-incriminating evidence were more likely to reach a not guilty verdict. The final study (Chapter 7) in which a civil trial was used found that jurors who recalled more incriminating evidence were more likely to reach a legally culpable verdict. However, no significant association was found between the amount of incriminating evidence recalled by jurors and a not legally culpable verdict.

The research findings presented in this thesis are the first to identify individual differences that influence how much jurors are able to note down during trials, and more importantly how much trial evidence they are able to recollect. It is crucial that jurors remember the important trial evidence given that the present studies showed that the type of evidence jurors predominantly recollect can predict their verdicts.

Acknowledgments

I would like to express my deepest gratitude to my supervisors. First, I would like thank Dr Craig Thorley for giving me the opportunity to study for a PhD and for his guidance, support, encouragement and plenty of constructive feedback. I would also like to thank Dr Luna Centifanti who came on board as my primary supervisor half-way through my PhD, for her continued support, thoughtful advice, and endless hours discussing statistics. In addition, thank you to Dr Minna Lyons for providing a fresh perspective on my PhD research.

Thank you to all the outstanding staff members, researchers and PhD students I had the privilege to work with. Special thanks go to Dr Paul Christiansen for his help regarding data analysis and providing me with a number of learning opportunities. Further, I wish to extend a huge thank you to the demonstrators. You made the last few years enjoyable and memorable, it was a pleasure working with you. I am also grateful for all the undergraduate student interns who assisted with the recruitment of participants and scoring of the data. Thank you all for your time and effort.

Lastly, I would like to thank my family for their continued support and love. To my parents, Alicja and Robert, for always believing in me and helping me in every possible way to complete my studies. Mamo, Tato, z całego serca dziękuję za wszystko co dla mnie uczyniliście. Special thanks to my grandparents and sisters for always cheering me on. Finally, my greatest thanks go to my partner, Felix, for encouraging me to apply for this PhD and for being by my side during all of my successes and setbacks. Thank you for your honest advice, words of encouragement, and kindness.

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Dissemination

All research findings presented in this thesis are published in international journals. All experimental chapters include extracts from the published manuscripts all of which were written by Joanna Lorek.

Chapters 4, 5 and 6

The findings presented in Chapters 4, 5 and 6 are published as a research article:

Lorek, J., Centifanti, L., Lyons, M., & Thorley, C. (2019). The impact of individual differences on jurors' note taking during trials and recall of trial evidence, and the association between the amount of evidence recalled and verdicts. *PLoS ONE*, *14*(2), DOI: 10.1371/journal.pone.0212491

The roles of the authors of the published article are as follows. Joanna Lorek designed the study, collected the data, analysed the data, wrote the first draft of the article, and revised the article. Craig Thorley provided critical feedback on the design of the studies, data analysis and the article. Luna Centifanti provided directions regarding data analysis and helped revising the article. Minna Lyons provided critical feedback and proofread the article.

Chapter 7

The findings presented in Chapter 7 are published as an original research article:

Lorek, J., Centifanti, L., Lyons, M., & Thorley, C. (2019). The impact of prior trial experience on mock jurors' note taking during trials and recall of trial evidence. *Frontiers in Psychology, 10*, 47. DOI: 10.3389/fpsyg.2019.00047

The roles of the authors of the published article are as follows. Joanna Lorek designed the study, collected the data, analysed the data, wrote the first draft of the article, and revised the article. Craig Thorley and Luna Centifanti helped design the study and aided in revising the article. Minna Lyons provided critical feedback and proofread the article.

Chapter 1: Juror memory, note taking and decision making

The research presented in this thesis investigated the impact of individual differences within jurors on their note taking during trials and recall of trial information. This chapter provides an overview of the relevant literature with regards to juror note taking, memory, and decision making. It begins with a brief explanation of the role that juries serve in the justice system and the prevalence of jury trials in the UK and elsewhere. Next, the chapter discusses research examining how well jurors recall trial evidence and how memory failures may influence jury decision making and subsequently shape their verdicts. The chapter then considers the benefits of permitting jurors to take notes during trials as a way of enhancing their memory of trial evidence. Lastly, the gaps in the literature are identified.

1.1 Jury duty

A jury consists of a group of lay individuals who are chosen to serve on a trial and asked to decide whether an accused person is guilty. In England and Wales, all individuals accused of an offence that carries a sentence of more than six months have the right to a jury trial. Juries are used in the Crown Court mainly in serious crime cases, such as rape, murder, and fraud. Individuals who are randomly selected from the eligible population receive summons and attend court on a specified date. They may then be selected to serve on a trial. Jury service lasts up to ten working days ("Jury service," 2018). However, this may vary depending on the length of a specific trial, as such jurors may be required to serve for longer than ten days. For example, a fraud trial (Regina v. Rayment 2003-2005) in England, also known as the Jubilee Line case lasted 271 days (Wooler, 2006). In addition, jurors may be asked to serve on more than one trial during a single jury service. Twelve individuals are selected from the pool of eligible jurors to serve on a particular trial. Before the trial begins each of the twelve selected jurors is sworn in. Their role during the trial is to listen to and remember as much of the trial evidence as possible. After all the evidence is presented, jurors are instructed by the judge on the relevant law. Jurors are then sent to the deliberation room where they are required to deliberate the trial evidence until they reach a verdict by deciding whether the defendant is guilty or not guilty. It is the judge who instructs jurors whether their verdict must be unanimous or whether a majority verdict (e.g. ten to two jurors) is allowed.

Modern jury trials (as described above) first emerged in England over 800 years ago (Bailey & Gunn, 1991; Lobban, 2002) and have since greatly evolved. However, the number of jury trials is currently declining. In England and Wales, jurors are now used in approximately one or two per cent of criminal trials (Lloyd-Bostock & Thomas, 2000). The official statistics indicate that in 2017 there was a total of 114,347 criminal trials (National Statistics, 2018). Therefore, currently jury trials constitute a small proportion of all trials. In addition, 365,500 summons were issued in 2017 and only 179,600 jurors attended the Crown Court (National Statistics, 2018). Although there has been a decline in jury trials in England and Wales, the general public have indicated that, as an accused, they would rather be subjected to a jury trial than a judge/magistrate's trial (Bar Council, 2002). This demonstrates the public trust in impartial juries (Roberts & Hough, 2011). Therefore, juries are still considered to be an important part of the UK criminal justice system, such that the impartiality of jurors is perceived by many citizens as key to law and justice.

Although the modern jury trials originated in England, they have been adopted by many justice systems across the world. For instance, in the US there are an estimated 148,558 jury trials that take place in state courts annually (Mize, Hannaford-Agor, & Waters, 2007). Over 31 million US adults receive jury summons annually and an estimated one-third of all US citizens are likely to serve as jurors during their lifetime (Mize et al., 2007). Therefore, jury trials play an important role in the US justice system and the constitution (the Sixth Amendment) declares the right to jury trials for all criminal cases (Hastie, Penrod, & Pennington, 2002). Jury trials are also used in other countries, for instance, Australia, New Zealand, Ireland, Scotland, and Canada (Hans, 2008) as well as Brazil, Guyana, Jamaica, and Sri Lanka (Vidmar, 2000). In the 1990s, jury trials have also been reintroduced in Russia and Spain (Thaman, 1999) suggesting that perhaps juries are (re)gaining popularity in some countries.

Taken together, juries remain an integral part of many justice systems across the world. Despite the decrease in jury trials in England and Wales, the public opinion that juries represent legal justice and impartiality is maintained by many. In order to preserve the public trust, jurors must reach fair verdicts which are grounded in the

evidence presented during trials. Therefore, it is crucial that jurors remember as much trial evidence as possible and what they do remember is accurate. However, the question arises as to how much trial evidence jurors are capable of remembering and how accurately they can then recall this evidence.

1.2 Juror memory

During trials, jurors are required to listen to and memorise the trial evidence which they then discuss during deliberations in order to reach just verdicts. As such, jurors' memory failures have the potential to result in unfair verdicts. In the wider literature, human memory has been shown to be erroneous and distorted (a review by Schacter, Guerin, & Jacques, 2011). Therefore, it is not surprising that jury research has also shown similar findings with regards to jurors' memory of trial information (Bodenhausen, 1988; Fitzgerald, 2000; Greene, 1981; Kassin & Wrightsman, 1979; Pennington & Hastie, 1988; Pritchard & Keenan, 1999, 2002). Such studies examined jurors' memory in terms of completeness (i.e. the proportion of trial evidence they remember) and accuracy (i.e. the number of errors).

A number of researchers have investigated how much trial evidence jurors remember. In two experiments, Bodehausen (1988) has assessed the completeness of mock jurors' recall of evidence from a criminal case. Jurors were tested in groups of up to twelve. Each juror was presented with a booklet containing the case evidence and they were asked to read it. They then individually reached a verdict and freely recalled everything they could remember from the evidence booklet. The completeness of free recall was on average just over 70 per cent. In another study, mock jurors were asked to listen to a crime story recording describing the evidence (Greene, 1981). Each juror was asked to freely recall the story as accurately as possible. On average participants recalled only 27 per cent of the evidence. Furthermore, Kassin and Wrightsman (1979) asked participants to watch a video of a mock trial which was based on a real criminal trial. After viewing the 60-minute video, they individually reached a verdict and answered cued recall questions asking about the most important trial evidence. On average, mock jurors recalled twelve out of a total of sixteen pieces of important evidence. A further two studies (presented in one article, see Pritchard &

Keenan, 1999), have also found that jurors' average memory score (i.e. open-ended questionnaire) was 65 per cent. Therefore, the empirical evidence demonstrates that mock jurors' memory of trial information is often incomplete.

Furthermore, others have investigated mock jurors' memory of critical trial evidence and its impact upon verdicts (Costabile & Klein, 2005). Mock jurors read a summary of a criminal trial which contained the critical evidence (i.e. a wiretap confession to the murder by the defendant). After reading the summary, each juror reached a verdict, listed the evidence that he/she used when making the decision and stated whether he/she used the critical evidence when reaching a verdict. On average 77 per cent of mock jurors recalled the critical evidence. Furthermore, on average only 67 per cent of the same mock jurors reported using the critical evidence when making a decision. This finding further confirms that jurors tend to forget trial evidence. More importantly, it demonstrates that forgetting critical trial evidence is likely to influence jurors' verdicts.

In addition to assessing the completeness of jurors' memory, a number of studies have examined how accurately jurors remember trial information. For example, Pennington and Hastie (1988) have asked mock jurors to individually read a summary of a real trial containing 119 pieces of trial evidence. After reaching verdicts, all participants completed a recognition task which included 93 genuine statements from the trial and 30 statements presenting new evidence. Jurors were asked to indicate whether they have previously seen the statements. Mock jurors correctly identified the genuine statements 82 per cent of the time. However, they also falsely recognised the new statements 24 per cent of the time. Furthermore, Pritchard and Keenan (1999) have conducted two experiments where mock jurors watched a 55-minute edited video of real criminal trial, then each juror reached a verdict and answered 30 open-ended questions about the trial. Although, errors on the memory test were rare, they were more likely to be a result of jurors providing an incorrect answer rather than not providing an answer. This suggests that jurors tend to accurately remember trial evidence.

Additionally, Fitzgerald (2000) has examined the accuracy of jurors' free recall after viewing a 70-minute video of a civil trial. Mock jurors made very few errors when

recalling trial information. However, some of the errors were notable and thus, they were reported by the author. For instance, some jurors recalled that all plaintiffs had cancer, however in the trial it was stated that only one plaintiff had cancer. Such errors may have influenced their verdicts; several of the same jurors gave the highest possible compensation award to all plaintiffs. More recently, Zuj, Palmer and Kemps (2015) have used the same trial video and also found that mock jurors can incorrectly recall small amounts of trial information. Therefore, the evidence suggests that jurors' recall of trial information is mostly accurate, such that there are very few errors when jurors are asked to freely recall or recognise trial evidence.

Taken together, the empirical evidence indicates that mock jurors' free recall and recognition of trial evidence is mostly accurate with very few errors being made. More importantly, jurors are likely to forget trial evidence which results in incomplete recollections. Studies using both free recall and cued recall memory tests have shown that mock jurors can sometimes recollect only a small proportion of trial information. In addition, some jurors may forget trial evidence which is critical to the case. Such incomplete trial memories are consequently influencing verdicts, with jurors who forget important incriminating evidence being more likely to reach not guilty verdicts. Nevertheless, there are a number of ways in which an individual juror's memory could be improved, for instance by allowing jurors to take notes during trials.

1.3 Juror note taking during trials

A simple way of facilitating jurors' memory is to permit them to take notes during trials. As will be explained, note taking may improve memory through the act of writing information down as well as by providing cues during retrieval (i.e. when recalling the information). There are variations in practice both between and within countries with regards to whether or not jurors are permitted to take notes during trials. For example, courts in England, Wales, Scotland, Ireland, and some US states guarantee jurors the right to take notes whereas courts in Australia, Canada, New Zealand, and some US states only permit note taking at the judge's discretion. Typically, jurors are given a pen and a blank notebook to take notes. They are not given any instructions regarding how to take notes or what kind of trial evidence to

note down. Jurors are not allowed to take their notes out of the courtroom during the trial. They are typically allowed to take their notes into the jury room and consult them during deliberations. However, in some cases jurors' notes may be confiscated prior to deliberations (Lloyd-Bostock, 2007).

There are a number of ways in which note taking during trials can be helpful. It may help jurors remember more trial evidence and increase the accuracy of their memories. However, when note taking was proposed to be introduced in courts as a memory aid for jurors, a number of concerns were raised (Flango, 1979; McLaughlin, 1982). It was believed that jurors would overemphasise the evidence they noted down and disregard the evidence that they did not note down; jurors would not be able to follow the trial as note taking would be too time consuming, and note taking jurors would distract those jurors who would not take notes. In addition, it was presumed that note takers would have more influence during deliberations when compared to non-note takers, and that jurors' notes would be inaccurate and biased (favouring either prosecution or defense). These concerns resulted in some US courts not allowing jurors to take notes (e.g., Watkins vs. State, 1965). This has triggered a number of field and laboratory studies to examine the various advantages and disadvantages of allowing jurors to take notes during trials.

A field study by Heuer and Penrod (1994) surveyed jurors from 160 trials across the US. The survey assessed real jurors' perceptions of note taking but did not examine their memory of trial evidence. Heuer and Penrod (1994) found no evidence for any of the above disadvantages. Additionally, jurors reported that note taking did not improve their memory of trial evidence. There were no significant differences between note taking jurors and non-note taking jurors with regards to their perception of how accurately they remembered the evidence, how difficult they found it to remember the evidence, and how satisfied they felt with their verdict. However, other field studies have provided evidence indicating that the use of note taking during trials is beneficial. For instance, real jurors allowed to take notes during trials perceived their notes to be a useful memory enhancer and reported that they found reaching the final verdict to be easier (Flango, 1979). Furthermore, Sand and Reiss (1985) interviewed twelve real jurors that served on a criminal trial during which they took notes. All

jurors were in favour of note taking. Moreover, seven out of the twelve jurors believed that note taking was a useful memory aid. Overall, the field studies provide no evidence for the suggested drawbacks of note taking. However, they demonstrate contradictory evidence regarding jurors' perceptions with regards to the benefits of note taking during trials.

Findings from field studies are difficult to interpret and compare as trials vary in length, quantity and complexity of the presented evidence. Such trial differences can all have an effect on jurors' memory. However, as stated above, all of the field studies relied on self report measures which assessed jurors' perception of note taking and thus, jurors' actual memory was not measured. As jury deliberations are confidential it is not possible to examine the quantity or accuracy of the trial information real jurors remember. Therefore, researchers set out to measure the effects of note taking during trials on memory of trial evidence in laboratory settings. Due to more controlled settings and the ability to replicate experiments, laboratory studies are more likely to provide an accurate and robust assessment of the effects of note taking on jurors' memory of trial information. Typically, jury eligible participants are asked to act as mock jurors. Participants either watch a trial video or read a trial transcript of a real or mock trial, reach a verdict, and then complete memory tests which assess their recollection of trial information.

Rosenhan, Eisner and Robinson (1994) were the first to examine the impact of note taking on jurors' recall of trial information in a laboratory setting. Jury eligible individuals watched a 75-minute video of a civil trial simulation which was based on a real case. Some groups of mock jurors were permitted to take notes whereas others were not permitted to take notes. After viewing the video, each juror was asked to complete a memory test which contained two multiple choice questions and eleven open-ended questions about the trial. Note taking jurors were allowed to consult their notes during the memory test. Note taking jurors recalled more trial information than non-note takers. The amount of notes jurors noted down was positively associated with the amount of trial information they recalled. Rosenhan et al. (1994) also assessed whether note taking affected jurors' verdict. It was found that whether or not jurors were allowed to take notes was not related to their verdicts. In addition, note takers

reported being more focused on the trial when compared to non-note takers. Therefore, the findings from this study suggest that note taking is an effective memory aid with potentially no effects on verdicts.

Furthermore, the potential benefits of jurors note taking were also examined in a more complex civil trial (Fitzgerald, 2000; ForsterLee & Horowitz, 1997a; ForsterLee, Horowitz, & Bourgeois, 1993). The 70-minute trial video was based on a real toxic tort case and contained a large amount of complicated legal and medical evidence. ForsterLee and Horowitz (1997) showed the trial video to mock jurors, with some being allowed to take notes. Next all notes were confiscated, and jurors were instructed to make a compensation decision. Then all jurors recalled freely as much trial information as they could remember. Note taking jurors recalled more probative evidence (i.e. case-related information) than non-note takers. In addition, the volume of notes taken was positively associated with jurors' recall of probative evidence as well as their accuracy of recall. The association between note taking and recall of probative evidence has been replicated (Fitzgerald, 2000). Furthermore, in another study, ForsterLee et al. (1994) investigated whether note taking may affect mock jurors' decisions in the complex civil trial. More specifically, the authors examined jurors' ability to distinguish between the least worthy plaintiff from the more severely injured plaintiff, and to grant higher rewards to more severely injured plaintiffs. Note taking jurors were more likely to correctly determine which of the plaintiffs were more severely injured than non-note taking jurors. In addition, note takers were more likely to assign the highest compensation to the most severely injured plaintiffs when compared to non-note takers. This suggests that note taking helps jurors to make decisions relating to verdicts.

Others have reported similar findings regarding the positive effects of note taking on recall when using a video of a criminal trial. For example, in Hope, Eales and Mirashi's (2014) study, mock jurors viewed the 35-minute video. Then each juror reached a verdict and individually answered 48 cued recall questions whilst being able to consult their notes. Half of the questions were legally relevant (i.e. substantive evidence) and the other half were legally irrelevant (i.e. less important details). Note taking jurors recalled more legally relevant evidence when compared to non-note

takers. In another study using a different video of a criminal trial, Thorley et al. (2016) found that note taking jurors freely recalled more trial evidence when compared to non-note takers. Therefore, the findings suggest that jurors benefit from note taking in both civil and criminal trials.

Since real jurors recollect trial evidence during deliberations, researchers have investigated the impact that note taking has on collaborative memory. In one study, mock jurors were tested in groups of five or six jurors (Horowitz & ForsterLee, 2001). They first watched a civil trial video, with some groups being allowed to take notes. In their groups they deliberated the trial evidence for 30 minutes and individually reached a verdict. Note taking groups were allowed to consult their notes. As a group they then completed a recognition test containing 44 true and false statements. Note taking groups were able to more effectively distinguish between the true evidence and the false evidence, and made fewer errors when compared to groups that did not take notes. In addition, note taking groups were also able to distinguish between the plaintiffs. Furthermore, Horowitz and Bordens (2002) tested groups of twelve mock jurors on their ability to freely recall trial evidence. They found that note taking groups of jurors freely recalled more evidence from a civil trial when compared to non-note taking groups of jurors. This finding has since been confirmed by another study of collaborative recall of trial evidence (Forsterlee, Kent, & Horowitz, 2005). In this study, note taking jurors had their notes confiscated prior to the memory test. Groups of five/six note taking jurors freely recalled more probative information when compared to groups that did not take notes. Taken together, the evidence demonstrates that note taking enhances not only individual jurors' memory but also collaborative memory of jurors.

Furthermore, a survey of 361 real jurors from England and Wales assessed their experiences of note taking during trials (Matthews, Hancock, & Briggs, 2004). Some jurors indicated that they struggled with note taking as they found it difficult to know what and how much to note down during trials. This could be a result of a lack of experience and lack of understanding of what is required of them. Therefore, researchers have investigated whether note taking guidance may help jurors. For instance, Hope et al. (2014) examined whether mock jurors would benefit from a more

structured way of note taking. Some jurors were asked to take notes on plain paper whereas others were presented with a structure trial ordered notebook. The notebook was structured according to the trial proceedings with headings indicating each part of the trial (e.g. opening statements, witness one, etc.) and including separate subheadings for the prosecution and defence. Mock jurors who took structured notes recorded more legally relevant evidence and performed better on a cued recall test when compared to those who took freestyle notes (given plain paper) and those who did not take notes. Others have reported that structured note taking was also found to enhance free recall of trial information (Thorley et al., 2016). This suggests that taking structured notes provides an additional benefit to jurors' memory.

Although field studies suggest real jurors do not believe note taking aids their memory, the laboratory findings clearly and consistently demonstrate that note taking does enhance mock jurors' memory of trial evidence. Regardless of the type of trial (criminal or civil), individual jurors and groups of jurors who take notes perform better on memory tests when compared to those who do not take notes. Note taking is not only useful to facilitate jurors' memory but more importantly it may also aid jury decision making, such that jurors who take notes are more likely to grant higher compensation to more severely injured plaintiff than jurors who do not take notes.

1.4 Theoretical explanations for the benefits of note taking

Two complementary effects can explain why note taking enhances recall: i) the encoding effect and ii) the external storage effect (Di Vesta & Gray, 1972). First, the encoding effect suggests that individuals may benefit from the act of note taking during encoding as it results in deeper processing of the newly learned information (Kiewra, 1985). Second, the external storage effect refers to the idea that having notes available for restudy may also enhance recall. Both of these explanations have been extensively investigated in the educational psychology literature.

Although trials and lectures may be largely different situations, they share a number of similar characteristics. First, students, similarly to jurors, are expected to listen to novel and often complex information presented over extended periods of time. In addition, both students and jurors tend to take notes whilst listening to the presented

information in order to remember as much as possible, and also to be able to recall such information at a later date. Furthermore, like jurors, students also appear to benefit from note taking. Specifically, lecture note taking has been shown to be associated with enhanced memory performance (e.g., Kiewra & Benton, 1988; Peverly & Sumowski, 2012; Titsworth & Kiewra, 2004). Due to the number of similarities between the note taking experience of jurors and students, it is plausible to presume that the benefits of note taking (in terms of later recall) in both domains have similar root causes. Thus, findings from the educational psychology literature will be reviewed followed by an outline of the few relevant studies from the jury literature.

Studies exploring the encoding effect typically allow some students to take notes during a lecture whereas others are not allowed to take notes. In order to examine the encoding effect, students are not permitted to review their notes prior to the memory test and are not permitted access to their notes during the memory test. A meta analysis of 57 such studies has found a small overall positive effect of note taking, with the largest effects found when recall was examined using free recall tests (d = .55) or cued recall tests (d = .47), and smaller effect sizes for recognition tests (d = .18) (Kobayashi, 2005). This suggests that the encoding benefit effect does exist but note taking is perhaps the most beneficial when individuals are asked to freely recall everything they can remember. Furthermore, the findings from lecture note taking have been extended to a new domain, note taking during trials. Thorley et al. (2016) and ForsterLee et al. (1994) have investigated whether note taking enhances jurors' memory at encoding or during retrieval. Both studies have demonstrated no significant differences in recall of trial information between jurors who were allowed to access their notes at retrieval and those who had their notes confiscated before the memory tests. Thus, the findings indicate that it is the process of note taking that enhances jurors' recall of trial information. This suggests that the note taking benefits occur at encoding.

Thorley et al. have argued that note taking enhances encoding as it encourages generative processing of the presented information (see also Bretzing & Kulhavy, 1979; Di Vesta & Gray, 1972; Peper & Mayer, 1978, 1986). Generative processing involves actively creating connections between diverse parts of new information (or

between the new information and one's own prior knowledge) so that it is stored in memory in a meaningful and organised way (Wittrock, 1992; Wittrock, Marks, & Doctorow, 1975). Generative processing results in a more elaborate and deeper encoding of the presented information and durable memory traces are created (Craik & Lockhart, 1972; Craik & Tulving, 1975; Kiewra, 1985; Wittrock & Carter, 1975). The benefits of generative processing, however, are not restricted to deeper encoding. When new information is stored in memory in a meaningful and organised way, it is easier to retrieve as one piece of information cues the recall of other related pieces of information (Mayer, 1996; Tulving, 1983).

Furthermore, a number of studies have also examined the external storage effect in lecture note taking. In these studies, all students were allowed to take notes, however only half of them were allowed to restudy/review their notes prior to the memory test. A meta analysis of 33 studies has found that the findings regarding reviewing notes are positive and robust, with an effect size of d = .75 (Kobayashi, 2006). Furthermore, in the jury literature, a single study has investigated the role of note reviewing on mock jurors' recall (Thorley, 2016). Some note taking jurors were given ten minutes to review their notes prior to the memory test. All note taking jurors were able to consult their notes during recall. It was found that jurors who reviewed their notes freely recalled more trial information than those who did not review their notes. It has been suggested that reviewing notes provides note takers with an opportunity to consolidate the information in memory (Kiewra, 1989). It may also be that reviewing notes leads to a reconstruction of the situation which serves as a cue for recalling further information beyond what is already noted down (Kiewra, 1989). Lastly, note takers who review their notes may also be able to engage in further generative processing of the written information in addition to the processing at encoding (Kiewra, DuBois, Christian, & McShane, 1991). This consequently results in deeper encoding of the information.

Taken together, the findings from the educational psychology literature suggest that students' memory performance benefits from both taking notes during encoding as well as reviewing notes. The effect sizes from the meta analyses are comparable for both explanations. Similarly, jury research also provides support for the encoding

effect and the external storage effect. This demonstrates that jurors' memory improves significantly if they are allowed to take notes and improves further by allowing jurors to review their notes prior to retrieval.

1.5 Juror note taking: gaps in the literature

Laboratory studies have consistently demonstrated that note taking improves jurors' memory of trial information; jurors who note down the most recall the most information. To date, there is no research examining the role that individual differences play in jurors' ability to take notes. Jurors' note taking ability may be influenced by a number of individual differences, such as handwriting speed, memory, attention and prior experience. These individual differences may not only affect the amount of evidence jurors are able to note down but, more importantly, the amount of trial evidence they subsequently recall. For instance, it may be that jurors with slower handwriting speed note down less, and thus remember less trial evidence than those with faster handwriting speed. Another example may be that jurors with lower levels of divided attention (i.e. splitting their attention between note taking and listening to the evidence) may find the act of note taking demanding. This may consequently result in them noting down less trial information and later remembering less trial evidence than note takers with higher levels of divided attention and those who do not take notes.

The principal aim of the research presented in this PhD thesis is to explore and understand the impact that individual differences have on juror's note taking during trials and recall of trial evidence. To date, there has been no research investigating how such individual differences may either hinder or facilitate how much jurors are able to note down and recall. However, there have been a number of studies investigating the impact of individual differences on lecture note taking and recall of lecture material. Therefore, Chapter 2 reviews the findings from the educational psychology literature.

Chapter 2: Individual differences and note taking

Irrespective of its context, note taking is a cognitively effortful task (Piolat, Olive, & Kellogg, 2005). However, note taking may be more or less demanding depending on the note takers' characteristics. To date, there has been no research investigating whether individual differences impact upon the completeness and accuracy of jurors' notes. Nevertheless, a few studies from the educational psychology literature have examined the impact of student individual differences on lecture note taking and recall of lecture material. As outlined in Chapter 1, there are a number of similarities between the note taking experience of jurors in courtrooms and students in lecture theatres. Therefore, the findings from the educational psychology literature may offer an insight into the kind of factors that may also be of importance to juror note taking. A large number of individual differences may influence note taking: (1) handwriting speed, (2) sustained and divided attention, (3) working memory and short-term memory, and (4) prior experience of note taking. This chapter considers each individual difference by reviewing findings from the educational psychology literature.

2.1 Individual differences in handwriting speed

Faster handwriting speed seems to increase the amount of notes taken when studying new materials. In one study by Peverly et al. (2007), 85 undergraduate students watched a 20-minute lecture video about problem solving. They were told they could take notes and it was important that their notes were as complete as possible to review them later. Following the video, all students completed the alphabet task which measured handwriting speed by assessing the number of alphabet letters each participant was able to write down in a set amount of time. They were then given the opportunity to review their notes. Lastly, students were given 10 minutes to summarise the lecture without being able to access their notes. Peverly et al. (2007) found that students with the fastest handwriting speed made better quality notes, as measured by completeness of explanations for each topic mentioned during a lecture. Moreover, they also demonstrated that the quality of notes was positively associated with the quality of recall of the lecture material (see also Peverly, Garner, & Vekaria, 2014; Peverly et al., 2013). In a conceptually similar study, Peverly and Sumowski, (2012) gave undergraduate students 15 minutes to read a history text and instructed them to

make notes whilst doing so. They found that students with the fastest handwriting speed made the most notes, and those who took the most complete notes had the greatest recall of the history text.

Faster handwriting speed is presumably beneficial as more notes can be taken in a set amount of time, and the better the quality of notes, the better the recall. Alternatively, note takers with slower handwriting speed may find it difficult to note down the information before it is forgotten and this may place more load on their cognitive resources, such as working memory capacity, which are necessary to process incoming information (Peverly, 2006; Piolat et al., 2005). Thus, fast handwriting speed has the potential to decrease the weight placed on the limited resources of working memory. Further, Peverly et al. (2014) have attempted to identify the factors that underpin handwriting speed. They have found that handwriting speed was predicted by students' fine motor speed and speeded access to verbal codes. Fine motor speed is the speed at which people can complete fine movements. Speeded access to verbal codes refers to the speed at which people access letters and words stored in memory. The latter is presumably important as the faster someone retrieves information from memory, the faster this person can write the information down. Taken together, having faster handwriting speed may allow individuals to note down the information temporarily stored in memory before it is forgotten.

Given the findings from educational psychology, jurors' handwriting speed may play a central role in determining the amount of notes they make during a trial and, as a consequence, the amount of information they then recall. It may be that jurors with faster handwriting speed have an advantage over those with slower handwriting speed, because they can make many more notes during a trial. This may subsequently help them remember more trial information. It may also be that jurors with slower handwriting speed make so few notes during a trial that note taking is not advantageous for them. Moreover, as mentioned above, slower note takers may forget the information before they get a chance to write it down. Thus, it may be that individual differences in jurors' memory capacity also play an important role in note taking.

2.2 Individual differences in memory

Note taking places huge demands on note takers' cognitive resources (Piolat et al., 2005). More specifically, note takers are required to temporarily hold newly learned information in their memory, restructure the information, and then note it down before it is forgotten. Therefore, it is not surprising that note taking has been linked to working memory capacity (Peverly, 2006; Piolat et al., 2005). It has been argued that individual differences in working memory capacity, short-term memory capacity, and the ability to process information may all influence student note taking during lectures (Bui & Myerson, 2014). The findings regarding each of these factors are discussed next.

2.2.1 Working memory

Working memory refers to a memory system where incoming information is temporarily stored and manipulated, and where the newly learned information interacts with the information already stored in long term memory (Baddeley & Hitch, 1974; Oberauer, 2009). This system has limited capacity and consists of three stores: (1) the phonological loop which is responsible for temporarily storing verbal information; (2) the visuospatial sketchpad which stores visual and spatial information; and (3) the central executive which is responsible for manipulating and processing information. More recently, Baddeley (2000) added the episodic buffer to the original model, which is responsible for communicating information between the phonological loop and the visuospatial sketchpad, as well as accessing information held in long term memory.

Complex span tasks, such as the reading span task (Daneman & Carpenter, 1980) are normally used to assess the working memory capacity. Such tasks require individuals to remember certain items whilst completing a demanding information processing task. Thus, they adequately assess working memory capacity by examining both the temporal storage (i.e. phonological loop and the visuospatial sketchpad) and processing of new information (i.e. the central executive). For instance, the reading span task requires individuals to read sentences (i.e processing task) whilst trying to remember the last word from each sentence (i.e. storage task). At the end of the trial, individuals are asked to recall the words; the more words they are able to recall the higher their working memory capacity.

Note taking involves manipulating and holding information in working memory (Piolat et al., 2005). Note takers must listen to the presented information, temporarily hold and manipulate it in their memory and write it down before they forget it. Note taking is therefore dependent upon the cognitive processes which take place in working memory. Presumably individual differences in working memory capacity influence note taking skills. However, evidence from the educational psychology literature has been inconclusive (see reviews by Bui & Myerson, 2014; Jansen, Lakens, & IJsselsteijn, 2017). For example, a study conducted by Cohn et al. (1995) investigated the role that working memory capacity plays in lecture note taking. Undergraduate students took notes during a 32-minute lecture about banking and then completed a 20-item multiple choice exam. Each participant completed two complex span tasks where they were asked to remember words whilst engaging in processing tasks. The operation span task involved solving mathematical equations whereas the reading span involved reading sentences. They also completed a simple word span task where they had to simply remember and recall a number of words. Then all three scores were combined to obtain a final working memory capacity score. Students' working memory capacity was not found to be associated with the amount of information recorded in their notes. However, it was found to be positively correlated with students' performance on the multiple choice test. Although this study found no association between working memory capacity and notes, others found a significant association (Hadwin, Kirby, & Woodhouse, 1999). In Hadwin et al.'s study, students took notes whilst watching a 43-minute video of a lecture. Two weeks later they freely recalled as much information from the lecture as they could remember. Then their working memory capacity was assessed (as measured by the reading span task). Their working memory capacity was positively associated with the amount of themes, main ideas and less important ideas included in their notes. However, there was no association between students' working memory capacity and their free recall.

Furthermore, Peverly and colleagues (2007, 2013, 2014) have investigated the relationship between student note taking and working memory in a number of experiments. Participants' working memory capacity was measured with the listening span task. The task was similar to the reading span task used in the previous study; however, here participants were asked to listen to the sentences being read out rather

than read the sentences themselves. In all of the experiments, participants took notes while listening to a recording of a lecture and then wrote a summary of the lecture. The first two experiments (Peverly et al., 2007, 2013) have found no significant associations between students' working memory capacity, and the amount of lecture ideas noted down, or the amount of lecture ideas recalled. Furthermore, their most recent study also found no significant associations (Peverly et al., 2014). However, Peverly et al. have argued that the association between working memory capacity and notes (p=.08) approached the commonly accepted significance threshold (p<.05). Thus, the authors believed that the non-significant results may have been significant with a larger sample size. Yet, their most recent findings are in line with the previous non-significant findings.

Notwithstanding statistical power, the lack of association between working memory capacity and note taking may be explained by differences within the students themselves, namely, the type of note taking strategies they use. In three experiments, Bui, Myerson and Hale (2013) have explored the role of working memory in different note taking strategies. Participants listened to a lecture whilst taking notes. Some were instructed to paraphrase and organise their notes as much as possible, whereas others were instructed to write down as much information as possible. After the lecture, participants' notes were confiscated, and they completed a free recall test and a short answer test. Bui et al. (2013) found that working memory was significantly associated with the quantity of notes only when participants were asked to organise their notes. Thus, the non-significant findings in previous studies (Peverly et al., 2014, 2007) may be accounted for by the kind of note taking strategy used by students, with taking organised notes being more dependent on working memory capacity when compared to simply writing information down (in a pure transcription style).

Taken together, the previous studies provide inconclusive findings regarding the relationship between working memory capacity, notes and recall. Some report an association between working memory capacity and notes, but not recall whereas others report significant associations between working memory capacity and recall but not notes. Therefore, further research is needed to clarify the impact that individual difference in working memory capacity may have on note taking and recall.

2.2.2 Short-term memory

Short-term memory is responsible for temporarily storing new information (Atkinson & Shiffrin, 1968). In contrast to working memory, short-term memory does not involve manipulating information. Thus, short-term memory mirrors the storage components of the working memory model only (namely the phonological loop and the visuospatial sketchpad). Typically, short-term memory capacity is assessed using a simple span task, such as the digit or letter span tasks, where participants are asked to recall either letters or digits and the number of items correctly recalled is their short-term memory span. In addition to assessing the role of working memory capacity (as measured by the complex span tasks), it is important to investigate the role of short-term memory capacity (as measured by the simple span task). If short-term memory is fully engaged with the current information, the new incoming information cannot be encoded and subsequently is not noted down. The simple span task will clearly assess the role of temporal storage capacity in note taking when participants are not required to manipulate information in memory as is the case with the complex span tasks. Note taking involves temporarily storing verbal and visual information in memory before it is written down. Thus, presumably those with higher short-term memory capacity will be more effective at note taking. To date, no study has investigated the role that short-term memory (as measured by a simple span task) plays in note taking.

2.2.3 Information processing

In addition to manipulating information in working memory, the cognitive ability to process and manipulate information in general may also influence note taking. Tasks to measure such ability have been developed based on the theory of discourse processing (van Dijk & Kintsch, 1983). According to this model, three mental representations are involved in comprehension and production of discourse: 1) a surface representation of the words; 2) a semantic textbase representation, which describes the meaning; and 3) a situational representation of the context. This theory led Benton, Kraft, Glover and Plake (1984) to develop information processing tasks which capture the information processing ability. One of the tasks, the word reordering task, requires participants to create meaningful sentences out of scrambled up words. During this task individuals do not hold any information in memory because the

scrambled up sentences are presented in front of them. Therefore, the task assesses only the cognitive ability to process and manipulate information.

To date, three studies have explored the impact of the ability to process and manipulate information has on note taking. First, Kiewra and Benton (1988) used the word reordering task to assess the relationship between the ability to manipulate information and student note taking. Undergraduate students took notes whilst watching a 20-minute video of a psychology lecture. Their lecture notes were scored for the number of words, number of complex propositions and main ideas recorded. Students' scores on the word reordering task predicted the number of words, number of complex propositions and main ideas that they recorded in their notes. Further, the three note taking variables predicted students' performance on the multiple choice exam and the course exam. Similar findings have been reported by others (McIntyre, 1992). In another study, Kiewra, Benton and Lewis (1987) have examined students' information processing ability and their academic performance. All participants had their information processing ability examined. A few weeks later they listened to a 55-minute live lecture whilst taking notes. Three weeks after the lecture, all participant completed a course exam. Both the number of words and lecture ideas recorded in notes were positively correlated with students' information processing ability. In addition, the more notes and lecture ideas students noted down the higher they scored on their course exam. Thus, the evidence suggests that students with lower information processing ability take fewer notes during lectures and subsequently recall less lecture material.

Considering the cognitive demands placed upon jurors during trials, it is plausible to assume that the findings from the educational psychology literature may apply to jurors. Jurors with lower levels of working and short-term memory capacity may find it more difficult to hold the incoming information in memory whilst taking notes during trials. This may lead them to note down less trial information which may subsequently result in them recalling less information when compared to jurors with higher levels of memory capacity. In addition, those with a lower information processing ability find it challenging to process the incoming information and thus, may be less effective note takers when compared to those with a higher information

processing ability. Taken together, cognitive factors, such as jurors' memory capacity and information processing ability may influence note taking during trials.

2.3 Individual differences in attention

In order to encode as much information as possible to remember it when reaching verdicts, jurors must stay attentive and focused on the evidence presented and remain so throughout the trial. However, this can be challenging as trials vary considerably in length. Some trials last only a few hours whereas other trials last a few months. For instance, the infamous trial of O.J. Simpson lasted more than 8 months. Jurors' attentional abilities are likely to become exhausted over time because every individual has limited cognitive resources (Piolat et al., 2005). This may influence juror note taking. For instance, it may be that jurors' ability to stay attentive and focused on the trial evidence over long periods of time (i.e. their sustained attention capacity) may influence their note taking during trials. Jurors with a higher attentional capacity may find paying attention easier than jurors with a lower attentional capacity. Furthermore, their ability to divide their attentional resources between noting down the trial information and listening to/watching the trial (i.e. their divided attention capacity) may also affect their note taking. If both attentional processes influence jurors note taking, this may subsequently influence the amount of trial information they remember.

2.3.1 Sustained Attention

As mentioned earlier, trials can last weeks and even months and thus, individual differences in sustained attention may be important in note taking. A single study from the educational psychology literature has examined the association between students' sustained attention, note taking and their recall of lecture material (Peverly et al., 2014). In that study, undergraduate students were required to take notes whilst listening to an audio clip of a psychology lecture. Afterwards, their sustained attention capacity was measured by administering the Lottery test which involves listening to a long list of lottery numbers and noting down the letters preceding the winning number. Peverly et al. found that students' sustained attention capacity was positively related to lecture note taking. In other words, students with higher sustained attention capacity

took more notes during the lecture. Furthermore, the more notes the students took the more lecture information they then recalled. Similar findings have been obtained in studies with undergraduate students who either do or do not have difficulties paying attention i.e. they suffer from attention-deficit hyperactivity disorder (Gleason, 2012; Vekaria, 2011). Such effects may be explained by the overload theory, which suggests that individuals' attentional resources can become exhausted when attempting to maintain focus on the same event for extended periods of time, but this can vary among people (Grier et al., 2003; Parasuraman & Davies, 1977; Parasuraman, Warm, & Dember, 1987). The results above suggest that students with lower levels of sustained attention capacity are less likely to focus on an entire lecture, causing them to take fewer notes and recall less lecture information when compared to students with higher levels of sustained attention capacity.

Given the lengthy proceedings of trials, jurors' sustained attention capacity may be an important factor affecting note taking during trials and their memory of trial information. Thus, the student findings may be applied to jurors, such that jurors with a lower levels of sustained attention capacity may be less likely to maintain focus on a trial over extended periods of time than those with higher levels of sustained attention capacity. As a result, they may note down less information during trials and subsequently recall less trial information.

2.3.2 Divided Attention

Divided attention may also be an important factor influencing note taking during trials since note taking jurors must divide their attentional resources between listening to the trial evidence and writing it down. To date, no studies have examined the role of divided attention in note taking. Therefore, it is unknown whether having lower levels of divided attention capacity are detrimental to the encoding of new information. Thus, findings from the wider memory literature will be discussed. Typically, the dual task paradigm has been used to study the effects that divided attention has on memory of simple material, such as word lists. For instance, initially participants are asked to study the to-be-remembering information under a full attention condition and then under a divided attention condition. A divided attention condition usually involves performing a secondary task, such as card sorting task. Such

tasks are designed to divert participants' attention from the to-be-remembered information. There is extensive evidence showing that participants' memory of items, such as words lists, (i.e. free recall, cued recall and recognition of words) is impaired under the divided attention condition when compared to the full attention condition (e.g., Baddeley, Lewis, Eldridge, & Thomson, 1984; Craik, Govoni, Naveh-Benjamin, & Anderson, 1996; Dewhurst, Barry, Swannell, Holmes, & Bathurst, 2007; Naveh-Benjamin, Craik, Perretta, & Tonev, 2000; Naveh-Benjamin, Guez, Hara, Brubaker, & Lowenschuss-Erlich, 2014). Thus, it can be argued that dividing attention during encoding decreases memory performance.

There are two fundamental explanations for the decrease in memory associated with dividing attention during encoding. First, memory performance of those under the divided attention condition may be influenced by the decrease in processing time (Craik et al., 1996). In other words, individuals have less time to encode the information because they are required to simultaneously perform two tasks. Nevertheless, reduction in processing time has been found to account for only a proportion of the memory decline under divided attention conditions (Craik et al., 1996; Naveh-Benjamin et al., 2000). Second, a reduction in effortful processing may be associated with the decrease in performance while dividing attention during encoding (Hasher & Zacks, 1979). Although there is some support for the idea of effortful processing (e.g., Naveh-Benjamin et al., 2000), it cannot fully account for the decrease in memory when dividing attention during encoding (Naveh-Benjamin et al., 2014).

Previous studies examining the impact that dividing attention has on memory used tasks designed to deliberately divert attention away from the to-be-learned information during encoding. This is detrimental to remembering and thus, results in less information being recollected. However, such findings offer only a limited insight into the impact of divided attention capacity on note taking. Note takers divide their attentional resources between two tasks, namely taking notes and listening to the incoming information. However, note taking is arguably a task that helps note takers focus on the to-be-learned information rather than diverting their attention from it. Thus, it may benefit memory.

To date, the impact of jurors' divided attention capacity on note taking during trials and recall of trial information is unknown. Presumably, jurors with lower levels of divided attention capacity may find it more challenging to divide attention between note taking and encoding trial evidence which could then result in them noting down less trial information and subsequent recalling less trial information when compared to those with higher levels of divided attention capacity.

2.4 Individual differences in prior experience

Prior experience of note taking may also be an important factor affecting juror note taking and recall of trial information. In the UK, jurors may be required to sit on more than one trial during their 10-day jury service and they may also be selected again two years after their previous service ("Jury service", 2018). Research has documented how often this occurs. Matthews et al. (2004) conducted a UK wide study investigating the experiences of 361 real jurors and whether they had prior experience of jury service. It has been found that 19 per cent of the real jurors reported that they had previously served as a juror. Thus, eligible members of the population who completed jury service in the past are likely to be re-selected for jury service. Similarly, in the US, Dillehay and Nietzel (1985) explored 902 real jurors' experiences who served on Kentucky trials. The findings indicated that 20 per cent of the jurors served on one previous trial whereas 14 per cent served on two previous trials (Dillehay & Nietzel, 1985). Therefore, the empirical evidence indicates that jurors are likely to serve on more than one trial. However, it is currently unknown whether juror note taking during trials is influenced by having prior experience.

Again, within the educational psychology literature, a few studies have investigated the associations between students' experience and lecture note taking. Two studies assessed the completeness of lecture notes of year one students and year three students (Hartley & Cameron, 1967; Hartley & Marshall, 1974). Hartley and Marshall (1974) that first year students recorded only 11 per cent of the lecture content and concluded that first year students had poor note taking skills. In comparison, Hartley and Cameron (1967) reported that third year students were found to note down 24 per cent of the lecture material. This suggests that note taking experience facilitates

students' note taking, such that students with more experience note down more lecture material. However, the two aforementioned studies used different samples and did not measure the improvement over time which makes it difficult to directly compare such findings.

Furthermore, Nye (1978) scored lecture notes for the number of words, main points, minor points, and words per point. First year students noted down less words and main/minor points when compared to second and third year students. However, this effect was found to be significant for male students only and the differences within female students were not statistically significant. The author argued that females in first year took more effective notes and thus, there was very little room for improvement when compared to final year. Another study has demonstrated that students' age was positively associated with the number of important points and words noted down during a lecture (Wilding & Hayes, 1992). The authors concluded that older students may be more motivated to take notes or may have more experience of taking more organised (structured) notes. This is supported by Carrier, Williams and Dalgaard (1988) who have shown that older students had more confidence in their note taking abilities.

Such improvements in student note taking may be due to their experience of note taking (Williams & Eggert, 2002) as students, similarly to jurors, do not receive any formal instructions on how to structure/organise notes and what to note down during lectures. The findings imply that students' note taking skills improve with experience and over time and thus, similar trends may be found in jurors who take notes multiple times and over time. However, it should be noted that there is a striking difference between the frequency and regularity of note taking done by student populations in lectures and jurors during trials. Nevertheless, presumably jurors experience of note taking during trials may increase how much they note down during the trial and subsequently increase their memory of trial information.

2.5 Individual differences and juror note taking

To date, there is no research investigating the impact of individual differences on note taking during trials. However, the studies from the educational psychology

literature suggest that a number of different factors may influence effective note taking. Given the evidence showing that note taking improves jurors' memory, it is important to investigate the factors which may facilitate or hinder juror note taking during trials. Therefore, this thesis covers four laboratory experiments, with each study investigating a unique individual factor that may influence juror note taking and recall of trial evidence. Namely, study one explored handwriting speed, study two investigated working and short-term memory, study three explored sustained and divided attention, and study four investigated the impact of prior experience on juror note taking and recall of trial evidence.

Chapter 3: Research aims and methodology

3.1 Research aims

The principal aim of the research presented in this thesis was to investigate the effects of individual differences on jurors' note taking during trials and recall of trial evidence. The two research questions associated with this aim were: (1) to discover the kind of individual differences that may be associated with effective/ineffective note taking during trials; and (2) to investigate whether these individual differences may also be associated with the quantity of trial evidence jurors recall. Based on prior research from the educational psychology literature (as outlined in Chapter 2), the present research investigated a number of individual factors: study one examined handwriting speed, study two considered divided and sustained attention, and study three explored short-term memory capacity, working memory capacity and information processing ability. Lastly, study four investigated the impact of prior experience of serving as a juror on note taking and recall of trial evidence.

Furthermore, a secondary aim of the present research was to explore whether jurors' recall of critical trial evidence influences their verdicts. Critical evidence refers to the most important pieces of incriminating and non-incriminating trial evidence that could influence a juror's verdict. As stated in Chapter 1, the more notes jurors take during trials the more they can then recall, and jurors' verdicts are based on the trial information they are able to recall. Therefore, all four studies explored whether the type of critical evidence (incriminating or non-incriminating) jurors predominantly recall may be associated with their verdicts. More specifically, each study examined whether recalling a larger quantity of incriminating trial evidence will result in jurors being more likely to reach a guilty verdict and whether recalling more non-incriminating trial evidence will lead to jurors reaching a not guilty verdict.

This chapter provides an overview of the overlapping methodology across all four experimental studies. It outlines the following: participants eligibility criteria, trial videos, basic experimental procedure, and data scoring methods. Variations and specific differences between the studies are outlined in each experimental chapter.

3.2 Participant eligibility criteria and sample size

All participants who took part in the present studies were eligible for jury service in the UK as outlined by the Juries Act 1974 ("Juries Act 1974," 2018). They were all aged between 18 and 75 years, resident in the UK for any period of at least 5 years since the age of 13, and on the electoral register. Individuals were excluded if they were currently on bail, served any part of a sentence of imprisonment or a sentence of detention; received a suspended sentence; had a community order or other community sentence in the last 10 years. Lastly, those liable to be detained under the Mental Health Act 1983 or lacking capacity under the Mental Capacity Act 2005 were also disqualified.

In all studies sample sizes were calculated using GPower version 3.1. The parameters were set as follows: power of 0.8, alpha level of .05, and a medium effect size. The medium effect size was used in line with previous studies from the educational psychology literature (e.g., Peverly et al., 2014) and jury research (e.g., Thorley et al., 2016).

3.3 Trial videos

3.3.1 Criminal trial

This is a video of a real murder retrial with the case name New Jersey vs. Daniel Bias. This video featured in all four studies. In this trial, the defendant was accused of murdering his wife by shooting her in the head. The defendant claimed he was innocent and that his wife first threatened him with a loaded gun and then shot herself. He also said that the trigger went off when he was trying to take the gun away. The edited video of the trial was 30 minutes long and contained the following: the opening statements, a videotaped statement from the defendant given to the police, the cross-examination of six witnesses (police officer, detective, doctor, victim's father, counsellor, and medical examiner), a 911 phone call made by the defendant, the cross-examination of the defendant, the closing statements, and the judicial instructions regarding verdict. The verdict is not shown allowing participants to reach their own verdict. This video was used in all studies because it was a real trial conducted in the

US in 1992 and thus, it was unlikely that the present participants would be familiar with the case/outcome. In addition, previous studies indicated mock jurors to be evenly split between guilty and not guilty verdicts for this trial (e.g., Hope et al., 2014; Pritchard & Keenan, 2002) which helped examine the associations between the type of evidence jurors recall and their verdicts.

3.3.2 Civil trial

This is a video of a mock civil trial with the case name Payne vs. Davis. This video featured in study four only (prior experience). The prosecution claimed that the plaintiff, Payne, suffered physical harm and car damages in an accident caused by the defendant, Davis, who was negligent as she was on the phone and thus, distracted. However, the defence counsel argued that the accident was the plaintiff's fault as she started to move the car on a green light but then stopped suddenly which led to the defendant to collide with the plaintiff's car. The trial video was 35 minutes long and contained the following: the opening statements, the cross examination of four witnesses (plaintiff, plaintiff's doctor, defendant, and eyewitness), the closing statements, the rebuttal from the plaintiff's counsel, and the judicial instructions regarding the verdict. The verdict is not shown allowing participants to reach their own verdict. This video was used in the final study to investigate whether the associations between the type of evidence jurors recall and their verdicts in the criminal trial would also be found in a different type of trial (i.e. a civil trial). It was unlikely that the participants would be familiar with this mock trial video.

3.4 Procedure

The basic procedure was similar in all four studies. During each experimental session except study 4 (prior experience), participants' individual differences were assessed at the start. Next, all participants were asked to act as mock jurors (henceforth called 'jurors'). They were seated at individual computers. Throughout the experimental session, they were unable to see each other performing the tasks due to desktop screen dividers. Each computer station was equipped with a pair of headphones and jurors were instructed to put these on. All jurors then watched a trial video, with some being allowed to take notes during the trial video. They were

informed that once the video was over they would reach a verdict and answer questions about the trial. No explicit reference was made to a memory test. Note taking jurors were provided with plain paper and pens. However, they were not given any instructions regarding note taking. Once the video ended, all jurors were asked to complete a demographic questionnaire where they indicated their age and gender, and a verdict questionnaire where they indicated their decision. For the criminal trial they were asked to state whether the defendant was guilty or not guilty, whereas for the civil trial they were asked to indicate whether the accused was legally culpable or not legally culpable. Lastly, they were asked to freely recall as much trial information as they could remember. Any variations to the basic procedure are outlined in each experimental chapter.

3.5 Coding of notes and free recall responses

All notes and free recall responses were scored for: (1) the quantity of correct information noted down; (2) the quantity of correct information recalled; (3) the quantity of incorrect information noted down; (4) the quantity of incorrect information recalled; (5) the quantity of critical evidence noted down (incriminating and non-incriminating); and (6) the quantity of critical evidence recalled (incriminating and non-incriminating).

Two separate coding sheets (one for each trial video) containing all correct information that appeared in the trial videos were used to assess the amount of correct trial information mock jurors noted down/recalled. There were 207 pieces of information in the criminal trial and 417 pieces of information in the civil trial. A piece of trial information was classified as correct if it appeared in the trial and was correctly described. In the criminal trial an example of a piece of correct information was "Victim pointed the gun at the defendant" and in the civil trial an example was "Plaintiff didn't look in the rear view mirror". Any piece of information that was repeated by more than one person during the trial was scored only once in the notes and free recall responses, irrespective of how many times this information was written down and whether or not it could be attributed to a specific source. Each unique piece of information noted down or recalled was awarded one point. The tally of the points

provided each mock juror with two scores for each of the trial videos: one score for the quantity of correct information noted down and another score for the quantity of correct information recalled.

All notes and free recall responses were also scored for errors (i.e. trial information incorrectly written down or recalled). A single point was awarded for each error. An example of an error in the criminal trial would be "Victim was holding the gun in her right hand", whereas in the civil trial an example of an error would be "Defendant was not on the phone". There were very few errors in participants' notes and free recall responses. Means and standard deviations for the quantity of incorrect information are reported in each experimental chapter. Therefore, the analysis in each of the studies focused on the quantity of correct trial information noted down/recalled.

In addition, the quantity of critical trial evidence noted down and freely recalled was also scored. Again, two separate coding sheets for critical evidence were used (see Appendix A). These coding sheets were based on two pilot studies (one for each trial video). The pilot studies were conducted to establish the most important evidence that could influence a juror's verdict in each trial. Thirty-three participants took part in the criminal trial pilot study and twenty-six participants took part in the civil trial pilot study. All participants were asked to watch the trial video and then write down the ten most important pieces of trial evidence they believed could impact upon jurors' verdicts. They were also asked to indicate whether each piece of evidence implied that the defendant was guilty or not guilty. Moreover, they were asked to rank these pieces of evidence from the most important to the least important. The pilot studies purposely used non-legal professionals (lay members of the public) to assess what they thought was the most important evidence presented during the trials. This enables the present research to examine the evidence that potential jurors may feel is important to focus on when reaching verdicts.

Combined, the participants identified 16 unique pieces of trial evidence that they believed could influence real jurors' verdicts in the criminal trial and 12 unique pieces of evidence in the civil trial. Half of the statements for each trial video implied that the defendant was guilty (henceforth called incriminating evidence) whereas the other half implied that the defendant was not guilty (henceforth called non-

incriminating evidence). In the criminal trial an example of incriminating evidence is the fact that "The victim was right handed but was shot on left hand side of her head" as it implies the defendant was guilty. Conversely, an example of a piece of non-incriminating evidence is the fact that "The victim had previously threatened to kill herself" which implies that the defendant was not guilty. In the civil trial an example of of a incriminating evidence is the fact that "The defendant admits talking on the phone/ being distracted" which suggests the defendant was legally culpable. An example of a non-incriminating evidence is the fact that "There was little damage to the plaintiff's car" which suggests that the defendant was not legally culpable.

In the present studies, each juror was awarded one point for noting down and freely recalling any of the critical trial evidence identified by the pilot studies. Each juror had four separate scores for each of the videos: the quantity of incriminating evidence noted down, the quantity of incriminating evidence recalled, the quantity of non-incriminating evidence noted down, and the quantity of non-incriminating evidence recalled.

Chapter 4: Individual differences in jurors' handwriting speed

4.1 Introduction

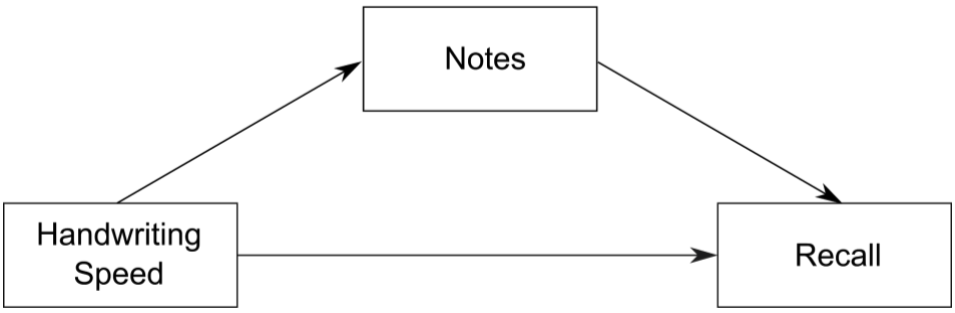
The principal aim of the present study was to examine the impact of handwriting speed on jurors' note taking during trials and their recall of trial evidence. Studies from the educational psychology literature have demonstrated that undergraduate students with faster handwriting speed make more complete notes (Peverly et al., 2014, 2007, 2013). Moreover, the quality of notes is positively associated with the quality of recall of the lecture material (Peverly et al., 2014, 2013). Note takers with slower handwriting speed may find it more difficult to note down the lecture information before it is forgotten and this may place a load on their cognitive resources, such as working memory, which are necessary to process the new incoming information (Peverly, 2006; Piolat et al., 2005). Thus, fast handwriting speed has the potential to decrease the weight placed on the limited resources of working memory. Given the findings from the educational psychology literature, jurors' handwriting speed may play a central role in determining how many notes they make during a trial and how much trial information they can later recall. This, in turn, may facilitate the quantity of incriminating and non-incriminating evidence they subsequently recall, which, of importance, may predict their verdicts.

In order to investigate the aims of the present study all mock jurors had their handwriting speed measured. They then watched a trial video (two-thirds took notes), reached a verdict, and recalled as much trial information as possible. The non-note takers were the control group which helped to determine whether note taking enhanced recall of trial information. Half of all note takers had their notes confiscated before recall to assess whether any beneficial effects of note taking that may be observed occur at encoding or retrieval.

Several findings were anticipated. In line with the findings from the educational psychology literature (Peverly et al., 2014), it was hypothesised that mock jurors with faster handwriting speed would note down more correct trial information during the trial, which would increase the quantity of trial information they would then recall. Furthermore, the present study aimed to test the association between handwriting speed, the quantity of critical trial evidence noted down, and the quantity of critical trial evidence recalled. Although there is no prior research investigating this,

it is plausible to expect that jurors with faster handwriting speed would note down more critical evidence during the trial, which would in turn increase the quantity of critical evidence they would recall. The present study explored these associations by examining the relations between handwriting speed, notes, and recall in two mediation models: (1) correct trial information, (2) critical trial evidence (see Figure 4.1).

Figure 4.1. Model of relations between handwriting speed, recall, and notes as the mediator.



Another aim of the present study was to investigate the effects of speeded access to verbal codes and fine motor speed on handwriting speed. Consistent with prior studies (Peverly et al., 2014), it was hypothesised that both factors would predict handwriting speed.

Furthermore, a third aim of the present study was to investigate whether the type of critical evidence (i.e., incriminating or non-incriminating) that mock jurors predominantly recall statistically predicts their verdicts. There is no previous research investigating this. Therefore, the present study explored whether jurors who recalled more incriminating evidence were more likely to reach a guilty verdict than a not guilty verdict, and whether those who recalled more non-incriminating evidence were more likely to reach a not guilty verdict.

Lastly, in an attempt to further examine previous findings relating to note taking during trials (e.g., Rosenhan et al., 1994; Thorley et al., 2016), the current study also tested the following hypotheses: (1) note takers would recall more correct trial information than non-note takers; (2) the quantity of correct trial information jurors noted down would be positively associated with the quantity of correct trial information they recalled; (3) having access to notes at retrieval would not result in an

additional memory enhancement as it is anticipated that it is the act of note taking at encoding that enhances mock jurors' recall as indicated by previous research (e.g., Thorley et al., 2016); (4) the condition (i.e. note taking with access at retrieval, note taking with no access at retrieval, non-note taking) that mock jurors were in would not affect their verdicts.

4.2 Method

4.2.1 Participants and design

One hundred forty-one participants (24 male participants) acted as mock jurors (henceforth called 'jurors'). All were between 18 and 66 years of age (M = 20.3, SD = 6.3) and were drawn from undergraduate student sample and staff at the university. They all received a payment in the form of either course credit (students) or a £10 voucher (staff). All were eligible for jury service in England and Wales (eligibility criteria are listed in Chapter 3, Section 3.1).

Participants were assigned to one of three conditions: note taking without access to notes at retrieval (N = 60), note taking with access to notes at retrieval (N = 54) and non-note taking (N = 27). Thus, two-thirds took notes, with half of those having access to their notes at retrieval. They were allocated to conditions in a quasi-random method, whereby testing for each condition took place on fixed days of the week. For instance, if participants completed the experiment on a Monday they were allocated to a non-note taking condition, whereas if participants took part in the experiment on a Tuesday they were in the note taking condition. Participants signed up for a session in groups of up to three without knowing which condition they would be assigned to.

The current study was of a correlational design. The main statistical predictor variable was handwriting speed (as measured by the Alphabet Fluency task) which featured in the mediation model. In addition, there were two predictors of handwriting speed: (1) fine motor speed (as measured by the Finger Tapping Task) and (2) speeded access to verbal codes (as measured by the Rapid Automatized Naming Task). The dependent variables were: (1) the quantity of correct trial information noted down; (2)

the quantity of correct trial information recalled; (3) the quantity of critical evidence noted down; (4) the quantity of critical evidence recalled; and (5) verdict.

4.2.2 Stimuli

The Alphabet Fluency Task was used to measure jurors' handwriting speed. This is a widely used measure of handwriting speed (e.g., Berninger et al., 1997; Peverly et al., 2014). When completing this test, jurors were instructed to write the letters of the alphabet in a sequential order (from ''a'' to ''z") on a lined sheet of paper. The time limit for this was set to 45 seconds. Jurors commenced with lowercase letters and then switched to uppercase letters if they managed to write out the entire alphabet before the time elapsed. Each legibly written letter was given one point. A letter was considered legible if a researcher was able to identify it. Illegible letters were given zero points. The total number of points was tallied to form each juror's final score.

The Rapid Automatized Naming Task (Denckla & Cutting, 1999) was used to measures jurors' speeded access to verbal codes. The predictive power of the task has been demonstrated in many studies (for a review see Semrud-Clikeman, Guy, Griffin, & Hynd, 2000). In this test, jurors were presented with 13 rows of 5 letters (the letters being either: a, b, d, o, p, s). The letters in each row were randomised. Jurors were asked to name as many letters as they could, working from left to right, within 15 seconds. The number of letters correctly read out was tallied to form each juror's final score.

The Halstead-Reitan Finger Tapping Task (Reitan & Wolfson, 1993) was used to assess jurors' fine motor speed. This is a widely used measure of fine motor speed (Peverly et al., 2014; Ruff & Parker, 1993; Strauss, Sherman, & Spreen, 2006). In this test, jurors were presented with an ambidextrous computer mouse and instructed to place the index finger of their dominant hand flat on the mouse button with all other fingers on the desk. Jurors then repeatedly pressed the button with their index finger as many times as possible in a set time frame. Each juror was administered a single practice trial. After the practice trial, the number of button presses per 10 seconds was recorded for five consecutive trials. To ensure consistency amongst all jurors, the timer was activated when the jurors first pressed the button and was automatically

deactivated after 10 seconds. The average number of button presses across the five trials was tallied to form each juror's final score.

Jurors watched a 30-min criminal trial video, New Jersey vs. Daniel Bias, (see Chapter 3, Section 3.3 for a description). Consistent with real trials in England and Wales (Crown Court Bench Book, 2010), all note taking jurors were provided with blank lined notepads and pens. All jurors were also given a demographic/verdict questionnaire asking them to state their age, gender, and whether they considered the defendant to be guilty or not guilty. Finally, a 10-page A4 lined booklet was provided for the free recall test.

4.2.3 Procedure

Jurors arrived at a computer laboratory in groups of up to three, but they were tested individually. In each session, all jurors were in the same condition. Each juror was seated at an individual PC. Throughout the study, they were unable to see each other performing the tasks due to desktop screen dividers. First, all jurors read the participant information sheet and signed the consent form. Next, they completed the Alphabet Fluency Task, the Rapid Automatized Naming Task, and then the Finger Tapping Task. Once they completed the handwriting speed-related tests, they watched the trial video. They were informed that once the video was over they would reach a verdict and answer questions about the trial. No explicit reference was made to a memory test. They were then informed whether or not they would be allowed to take notes during the trial. Note taking jurors were then provided with notepads and pens. However, no guidance regarding note taking was given. The trial video commenced. After the video, they were asked to complete the demographic/verdict questionnaire. Next, all jurors completed the free recall test with no time limit. They were instructed to write down as much trial evidence as they could remember. Half of the note takers were allowed to consult their notes throughout the memory test, the other half had their notes confiscated before the test. Upon completion of the free recall test, all jurors were debriefed and the study ended. The study lasted approximately 60 mins.

4.2.4 Coding

The notes and free recall responses were scored for the quantity of correct and incorrect trial information noted down/recalled. The amount of incorrect trial information that jurors either noted down ($M = 0.21$, $SD = 0.47$) or recalled ($M = 0.20$, $SD = 0.53$) was small. Therefore, it was not possible to conduct a meaningful statistical analysis on the quantity of incorrect trial information noted down or recalled. As such, the main analysis includes the quantity of correct trial information noted down/recalled only.

Furthermore, the notes and free recall responses were also scored for the quantity of critical trial evidence noted down and recalled, including a total score, as well as one score for the quantity of incriminating evidence noted down/recalled, and another score for the quantity of non-incriminating evidence jurors noted down/recalled. The coding process is outlined in Chapter 3 (Section 3.5).

Twenty percent of mock jurors' notes and free recall responses were checked for inter-rater reliability by two independent raters who were blind to the aims of the study. One rater coded the notes and the other rater coded the free recall responses. The inter-rater agreement between the original rater and independent raters was 83.6% for notes and 84.5% for free recall. All disagreements were resolved by the original rater and an independent reviewer who compared them and determined the correct score.

4.3 Results

Initially, correlational analyses were used to examine the relations between handwriting speed, the quantity of critical evidence noted down and recalled, and the quantity of correct information noted down and recalled (see Table 4.1).

Table 4.1

Descriptive statistics and zero-order correlations (Pearson's r) showing jurors' handwriting speed, the quantity of critical evidence noted down and recalled, and the overall quantity of correct trial information noted down and recalled.

Variable	Mean (±SD)	1	2	3	4
1. Handwriting Speed	72.42(±16.54)	-			
2. Critical Notes	8.17(±2.82)	.26**	-		
3. Critical Recall	6.28(±2.33)	.12	.37***	-	
4. Correct Notes	29.34(±15.19)	.32***	.72***	.23*	-
5. Correct Recall	19.01(±8.14)	.27**	.31***	.59***	.49***

* $p < .05$, ** $p < .01$, *** $p < .001$

4.3.1 Mediating effects of note taking

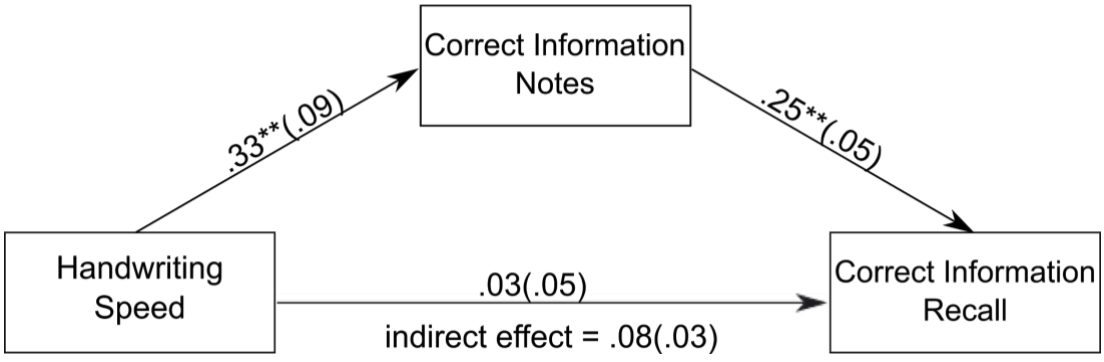
Two separate simple mediation analyses were conducted to assess (1) the direct effect of handwriting speed on recall, and (2) the indirect effect of handwriting speed on recall through notes. Model one examined the direct and indirect effects with regards to the quantity of correct trial information jurors noted down/recalled, and model two examined the quantity of critical trial evidence noted down/recalled. The two models included only those jurors who took notes during the trial.

All analyses were conducted using PROCESS (Version 2.16.1) for SPSS (Hayes, 2013). The results of these analyses are summarised in Figure 4.2 and Figure 4.3. Unstandardised estimates, standard error (SE) and 95% confidence intervals (CI) of the estimates are reported. CIs which did not include zero were significant. In addition, k^2 is also reported, which is an effect size for indirect effects in mediations

(Preacher & Kelley, 2011), and P_M which is a ratio of the indirect effect to the total effect (Alwin & Hauser, 1975). k^2 and P_M values were calculated using the MBESS package (version 4.4.3) (Kelley, 2017) in R (version 3.4.3) (R-Core Team, 2018).

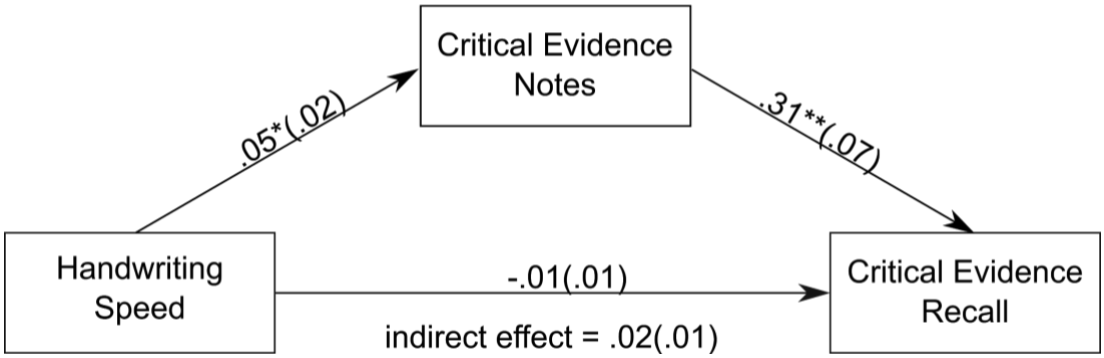
The first mediation analysis revealed a positive association between handwriting speed and the quantity of correct trial information noted down (see Figure 4.2). In addition, the quantity of trial information jurors noted down was positively associated with the quantity of trial information they subsequently recalled. Figure 4.2 demonstrates a non-significant direct effect of handwriting speed on correct recall, unstandardised estimate = .03 (.05), p = .57, 95% CI = -.07, .12. More importantly, there was a significant indirect effect of handwriting speed on the quantity of correct trial information recalled, unstandardised estimate = .08 (.03), 95% CI = .03, .15, k^2 = 0.15, P_M = 0.75 (k^2 indicates a medium effect size). This indicates that jurors with faster handwriting speed recalled the greatest quantity of correct trial information, which was mediated by the quantity of correct trial information they noted down during the trial.

Figure 4.2. Mediation model showing the association between handwriting speed and the quantity of correct information recalled, with the quantity of correct information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). ** p <.001



The second mediation model showed that handwriting speed was positively associated with the quantity of critical evidence jurors noted down during the trial (see Figure 4.3). There was also a positive association between the quantity of critical evidence jurors noted down and the quantity of critical evidence they recalled. Figure 4.3 shows a non-significant direct effect of handwriting speed on the quantity of critical evidence recalled, unstandardised estimate = -.01 (SE =.01), p = .43, 95% CI = -.04, .02. However, there was a significant indirect effect of the quantity of critical evidence noted down during the trial, unstandardised estimate = .02 (SE =.01), 95% CI = .01, .03, k^2 = 0.11, P_M = 3.43 (k^2 indicates a medium effect size). More specifically, jurors with faster handwriting speeds recalled a greater amount of critical evidence, via writing down the most critical evidence during the trial.

Figure 4.3. Mediation model showing the association between handwriting speed and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values are unstandardised regression coefficients (SEs). * p <.01; ** p <.001



4.3.2 Predictors of handwriting speed

A multiple regression analysis was conducted to analyse the effects of fine motor speed and speeded access to verbal codes on handwriting speed. The overall model was significant, R^2 = .37, R^2 adjusted = .14, F(2, 138) = 7.22, p < .001. Speeded access to verbal codes was positively associated with handwriting speed (β = 0.32, p

< .001). However, fine motor speed was not a significant predictor of handwriting speed ($\beta = 0.09$, $p = .326$).

4.3.3 Verdict

Seventy-three percent of all jurors believed that the defendant was guilty (78% in the access to notes during retrieval condition, 70% in the no access to notes condition and 70% in the non-note taking condition). A logistic regression was performed to assess whether the type of evidence jurors predominantly recalled predicted their verdicts. More specifically, the analysis assessed whether the amount of incriminating evidence and the amount of non-incriminating evidence jurors recalled predicted their verdicts (0 = not guilty, 1 = guilty).

The overall model significantly predicted the likelihood of jurors reaching a guilty verdict, correctly identifying 75.9% of cases ($x^2(2) = 26.62$, Cox & Snell $R^2 = .17$, Nagelkerke $R^2 = .25$, $p < .001$). The amount of incriminating evidence recalled statistically predicted jurors reaching a guilty verdict, B = .51 (SE = .15), Wald = 12.28, $p < .001$; OR = 1.67, 95% CI = 1.25, 2.23, such that for every additional piece of incriminating evidence recalled, jurors were 1.67 times more likely to reach a guilty verdict. Furthermore, the amount of non-incriminating evidence recalled negatively predicted jurors reaching a guilty verdict, B = -.45 (SE = .13), Wald = 12.44, $p < .001$; OR = 0.64, 95% CI = 0.50, 0.82, such that for every piece of non-incriminating evidence recalled, jurors were 1.56 times less likely to reach a guilty verdict.

Furthermore, another logistic regression analysis was conducted to evaluate whether the condition that the mock jurors were in (note taking with access at retrieval, note taking with no access at retrieval, non-note taking) was associated with their verdict. The regression revealed that the condition did not predict verdict, $x^2(1) = .26$, $p = .40$, Cox & Snell $R^2 = .005$, Nagelkerke $R^2 = .007$.

4.3.4 Benefits of note taking and note access at retrieval

An independent t-test was used to examine whether note-taking jurors recalled more correct trial information than non-note taking jurors. Note taking jurors recalled

significantly more correct trial information (M = 20.07, SD = 7.94) than jurors who did not take notes (M = 14.56, SD = 7.60), $t(139) = 3.27$, p =.001 , d = 0.71.

It was also examined whether note-taking jurors who could access their notes at retrieval recalled more correct trial information than note-taking jurors who did not have access to their notes at retrieval. There was no significant difference between the amount of trial information recalled by those who could access their notes (M = 20.70, SD = 7.72) and those who could not (M = 19.50, SD = 8.15), $t(112) = 0.81$, p =.42, d = 0.15.

4.4 Discussion

The primary aim of this study was to investigate the associations between jurors' handwriting speed, the quantity of notes they make during a trial, and the quantity of trial evidence they recall. This is the first study to demonstrate that jurors with faster handwriting speeds recall a greater quantity of correct trial information, and this is via being able to note down a larger quantity of correct trial information during the trial. More importantly, those with faster handwriting speeds recalled more critical trial evidence, through noting down more critical evidence during the trial. Furthermore, jurors who recalled more incriminating evidence were more likely to find the defendant guilty whereas jurors who recalled more non-incriminating evidence were less likely to find the defendant guilty. This finding indicates that the type of trial evidence jurors predominantly recall is associated with the verdict they reach. In addition, the present findings regarding note taking during trials are in line with the previous findings: (1) note taking enhanced jurors' recall of correct trial information; (2) jurors who took more notes recalled more trial information (3) jurors who were able to consult their notes during the memory test did not recall more than those who had their notes confiscated, suggesting the benefit comes at encoding; and (4) the condition that the jurors were in (no note taking, note access during the memory test, or no note access during the memory test) was not found to be related to their verdicts.

The present study is the first to show that jurors with faster handwriting speed take more notes during a trial. This finding is consistent with findings from the educational psychology literature where it has been demonstrated that students with

the fastest handwriting speed take more notes during lectures (Peverly et al., 2014, 2007, 2013). More importantly, the current findings demonstrate that faster handwriting speed has an indirect effect on the quantity of correct information and critical evidence juror recall, through being able to note down a greater quantity of correct information and critical evidence during the trial. This novel finding is important as it identifies an individual factor, namely handwriting speed, that influences how much jurors are able to note down during a trial and also how much trial information and critical evidence they then remember.

In order to explain this finding, it could be argued that note takers with faster handwriting speed are physically able to take more notes during presentations/trials. In other words, faster note takers write down more information during the trial, and the increased quantity of notes leads them to recall a greater quantity of information. Nevertheless, it may also be that note takers with slower handwriting speed find it more difficult to note down the information before it is forgotten. Trying to hold the information in memory while noting down the information may then result in more cognitive load being imposed upon their working memory as they work to store presented information while new information is still forthcoming (Peverly, 2006; Piolat et al., 2005). Individuals with fast handwriting speeds, then, may have more working memory resources available which they can utilise to take better notes.

Furthermore, the present study showed that individuals with higher speeded access to verbal codes had faster handwriting speed. However, fine motor speed was not found to be related to handwriting speed. This is inconsistent with Peverly et al. (2014), who found that both factors predicted handwriting speed. Discrepancies between these two sets of findings could be a direct result of different experimental equipment used to assess fine motor speed. Peverly et al. (2014) used a short lever whereas a computer mouse was used in the present study. Future research is needed to confirm if these differences explain the conflicting results.

Of key importance to the judicial process, the present study found that verdicts were predicted by the type of critical evidence jurors predominantly recalled. Specifically, jurors who recalled more incriminating evidence were more likely to find the defendant guilty, and those who recalled more non-incriminating evidence were

less likely to find the defendant guilty. This study is the first to demonstrate that variations in the kind of critical evidence jurors recall is associated with the verdicts they reach. Thus, to make informed and just decisions, jurors must remember as much of the critical evidence as possible. In sum, jurors' recollection is influenced by the quantity of notes they take during a trial, and the quantity of notes jurors take is affected by how fast they can write.

In general, note taking appears to be a simple and effective memory aid. The finding that note taking enhanced mock jurors' correct recall of trial information is in line with prior research (e.g., Thorley et al., 2016). In addition, the finding that jurors who took a greater quantity of notes recalled a larger quantity of trial information is also consistent with prior research (e.g., Rosenhan et al., 1994). Therefore, the present study replicated previous findings by confirming that note taking during trials enhances jurors' memory, and note takers who take more notes also remember more trial information.

Further, it was also found that whether jurors were able to consult their notes during the memory test did not influence the quantity of trial information they recalled. Prior research shows that the act of note taking enhances encoding of trial information and this then enhances later recall of such information (ForsterLee et al., 1994; Thorley et al., 2016). The present findings are in line with these previous findings, and suggest that jurors get no further benefit from consulting their notes. Presumably note taking supports deeper generative processing of the presented information (Bretzing & Kulhavy, 1979; Di Vesta & Gray, 1972; Peper & Mayer, 1986) which results in the information being memorised in a more meaningful and organised way (Wittrock, 1992; Wittrock et al., 1975). Durable memory traces are created and memory is improved as a result of more elaborate and deeper encoding of the presented information (Craik & Lockhart, 1972; Craik & Tulving, 1975; Kiewra, 1985). Additionally, this organised storage strategy can potentially facilitate remembering as recall of one piece of information can induce the recall of other related pieces of information (Mayer, 1996; Tulving, 1983).

Taken together, the present study is the first to show that jurors' handwriting speed is related to how much they are able to note down during the trial and more

importantly how much they are then able to recall. As mentioned above, it may be that those who are able to write faster during trials may free up their cognitive resources. This may, in turn, allow them to hold more trial information/critical evidence in memory which may lead to them being able to take more notes. Therefore, the next study explores the effects of individual differences in jurors' working memory on note taking during trials and recall of trial evidence. In addition, it attempts to replicate the present finding indicating an association between the type of evidence jurors recall and their verdicts.

Chapter 5: Individual differences in jurors' memory capacity and information processing ability

5.1 Introduction

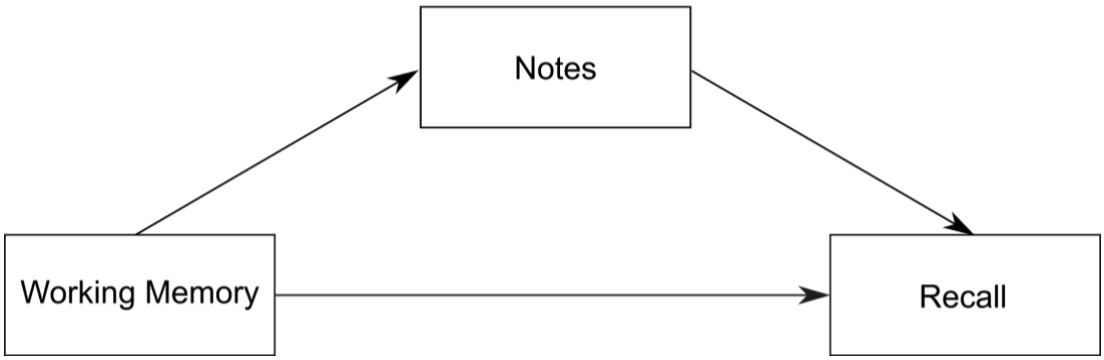
The main aim of the present study was to investigate the effects of individual differences in working memory, short-term memory, and information processing ability on jurors' note taking during trials and their recall of trial evidence. In addition, the study further explored the associations between the type of evidence jurors recall and their verdicts. Findings from the educational psychology literature have provided conflicting results regarding the association between working memory storage capacity and lecture note taking. Some have found a significant positive associations between working memory and note taking (Hadwin et al., 1999) whereas others reported non-significant results (Peverly et al., 2014). Presumably individual differences in working memory storage capacity plays an important role in note taking during trials as note taking relies heavily on note takers being able to hold information in memory before it is written down. Further, to the best of my knowledge, no study has explored the relationship between note taking and short-term memory by using traditional short-term memory span tasks. As discussed in Chapter 2, it is theoretically plausible to assume that individual differences in short-term memory storage capacity would play a role in note taking and subsequent recall of information. Lastly, the cognitive ability of information processing has been found to be positively related to lecture note taking, as indicated by studies from the educational psychology literature (Kiewra et al., 1987). Presumably jurors with higher levels of information processing ability would note down more trial information during trials and would then be able to recollect more trial information.

To investigate the aims of the present study all jurors had their short-term memory storage capacity, working memory storage capacity, and information processing ability assessed. Next, they all watched a trial video with some of them being allowed to take notes. After the video ended, all note takers had their notes confiscated. Each juror subsequently reached a verdict and freely recalled everything they could remember from the trial.

A number of tentative predictions were tested in the present study. In line with the previous study from the educational psychology literature (Hadwin et al., 1999), it was predicted that jurors with higher working memory storage would take a greater

amount of notes during the trial. This would subsequently enhance jurors' recall of trial information. These associations between working memory storage capacity, notes, and recall were explored using two simple mediation models (see Figure 5.1): (1) correct trial information noted down/recalled, (2) critical trial evidence noted down/recalled.

Figure 5.1. Model of relations between working memory storage capacity, recall, and notes (mediator).



Given the lack of previous research, the present study was the first to explore the associations between short-term memory storage capacity, notes, and recall. The associations were also tested using two mediation models (correct trial information, critical trial evidence). Presumably jurors with higher short-term memory storage capacity would take more notes during the trial, which would subsequently result in them recalling more trial information when compared to jurors with lower short-term memory storage capacity.

Furthermore, in line with previous research from the educational psychology literature (Kiewra et al., 1987), the present study examined whether jurors with a higher level of information processing ability would take a greater amount of notes and consequently they would recall more trial information. As above, the associations were tested using two simple mediation models (i.e., correct trial information, and critical trial evidence).

A second aim of the present study was to replicate the associations between the type of evidence jurors recalled and the verdicts they reached. The previous study demonstrated that jurors who recalled more incriminating evidence were more likely

to reach a guilty verdict, whereas those who recalled more non-incriminating evidence were more likely to reach a not guilty verdict. Similar effects were expected to be found in the present study.

Lastly, the present study tested a number of hypotheses relating to note taking during trials. Consistent with the findings reported in this thesis (Chapter 4) and in other research (Rosenhan et al., 1994; Thorley et al., 2016), the present study predicted that: (1) note taking jurors would recall more correct trial information than non-note taking jurors; (2) the would be a positive associations between the quantity of correct trial information jurors noted down and the quantity of correct trial information they recalled; and (3) there would be no association between the condition (i.e., note taking vs non-note taking) that jurors were and their verdicts.

5.2 Method

5.2.1 Participants and design

Eighty-five participants (17 male participants) between 18 and 61 years of age (M = 22.7, SD = 8.8) who were eligible for jury service in England and Wales acted as mock jurors (henceforth called 'jurors'). They were a combination of undergraduate students and staff at the university and received payment in the form of either course credit or a £10 voucher. They were assigned to one of two conditions: a note taking (N = 58) or a non-note taking condition (N = 27). They were assigned to conditions as in the previous study (a quasi-random method).

The present study had a correlational design. The following statistical predictor variables were used: (1) short-term memory capacity (as measured by the Letter Span task), (2) working memory capacity (as measured by the Listening Span task), and (3) information processing ability (as measured by the Word Reordering task). As in the previous study the same dependent variables were used, namely: (1) the quantity of correct trial information noted down; (2) the quantity of correct trial information recalled; (3) the quantity of critical evidence noted down; (4) the quantity of critical evidence recalled; and (5) verdict.

5.2.2 Stimuli

The Letter Span task was used to measure jurors' short-term memory storage capacity. This task involved verbally presenting jurors with lists of letters. Jurors were asked to remember the letters and verbally recall them in the same order as they were presented. None of the lists contained the same letter twice. On the first trial, the researcher read out a list of three letters (e.g., 'x, g, k') to each juror who was instructed to immediately repeat them back in the same order. If he/she repeated all letters correctly, they passed the trial and were given a list of four letters (e.g., 'w, b, o, l'). Each trial increased by one letter. If jurors failed at the first attempt (e.g., 6 letters), they were given a second attempt using the same number (e.g., 6) of a different set of letters. If they failed at the second attempt, the task was terminated. The length of the longest list a juror repeated correctly was his/her short-term memory capacity score. The letter span task was chosen as recalling letters rather than other items (e.g., digits) is more similar to the type of items jurors are required to recall (i.e. words) from trials.

The Listening Span task (Daneman & Carpenter, 1980) was used to assess jurors' working memory storage capacity. (Sixty sentences (between 11 and 16 words long) were pre-recorded. Half of the sentences did not make sense as they contained random words. There were five different levels which varied in the number of sentences presented from two to six. Each level consisted of three trials. For example, level one consisted of three trials of two sentences, level three consisted of three trials of three sentences, and so on. Jurors were required to complete two tasks. First, after each sentence was played, jurors were required to determine whether the sentence made sense by circling yes or no on an answer sheet. They were also required to remember the last word from each sentence for later recall. After each trial, jurors were prompted by a beep to recall the last word from each sentence in that trial and write them down in the same order as they had been presented. All jurors were given two practice trials before they began the task. The final score was the level at which jurors correctly recalled words on two out of three trials. If he/she scored one out of three on a trial he/she had half a point added to the final score. The final scores could range from zero to six. This task was chosen to measure working memory capacity because it closely resembles the note taking process during trials (i.e. listening to, processing

and encoding the incoming information) and thus, more accurately captures the demands of jurors' note taking demands when compared to other complex span tasks.

The Word Reordering task (Benton et al., 1984) measures individual differences in information processing and information manipulation in working memory. Jurors were presented with six scrambled sentences, each consisting of ten words. The sentences were taken from a Health Psychology textbook. An example of a scrambled sentence would be "for norms men differently may social women be operating and", and the solution would be "Social norms may be operating differently for men and women". Jurors were instructed to reorganise the words in each scrambled sentence in order to create meaningful sentences. Some of sentences had more than one possible solution. However, jurors were instructed to write down only one solution and use all ten words for each sentence or as many words as they could. Jurors were given eleven minutes to complete the task which is in line with previous research (Kiewra & Benton, 1988). The final score was calculated based on the number of errors each juror made. A single point was deducted for every mistake from the total possible score (i.e. 60 points). If jurors did not include all words in their sentence, a single point was deducted for each missing word. A single point would also be deducted for every incorrectly positioned word. This task was chosen to measure the ability to process information which is an important component of note taking during trials and is not exclusively measured by the listening span task.

The criminal trial video of New Jersey vs. Daniel Bias was used in the present study (see Chapter 3, Section 3.3 for description). Blank lined notepads and pens were provided for those in the note taking condition. Similarly to the previous studies reported in this thesis, the demographic/verdict questionnaire asked for jurors' gender and age, and also asked for their verdict. A 10-page A4 lined booklet was provided for the free recall test.

5.2.3 Procedure

Jurors arrived at a computer laboratory in groups of two but they were tested individually. They were seated at individual PCs separated by desktop screen dividers. They were instructed to read the participant information sheet and sign the consent

form. Then, jurors completed the letter span task, the listening span task and the word reordering task. They watched the trial video, with those in the note taking condition being provided with notepads and pens. After the video ended, all note taking jurors had their notes confiscated. All jurors were then asked to complete the verdict questionnaire. Lastly, all jurors were asked to write down as much trial information as they could remember with no time limit. After completing the free recall test, all jurors were debriefed, and the study ended. The study lasted approximately 70 minutes.

5.2.4 Coding

The coding procedure of notes and free recall responses was the same as in the earlier studies (see Chapter 3, Section 3.5). There was very little incorrect trial information recorded in notes (M = 0.07, SD = 0.26) and free recall responses (M = 0.29, SD = 0.63). Thus, the main analysis focused on the quantity of correct trial information and critical evidence noted down and recalled.

Twenty percent of mock jurors' notes and free recall responses were checked for inter-rater reliability by two independent raters who were blind to the aims of the study. The inter-rater agreement between the original rater and independent raters was 98% for notes and 95% for free recall. All disagreements were resolved by the original rater and an independent reviewer who compared them and determined the correct score.

5.3 Results

First, correlational analyses were used to examine the associations between working memory, short-term memory, information processing ability, the quantity of critical evidence noted down and recalled, and the quantity of correct information noted down and recalled (see Table 5.1).

Table 5.1

Descriptive statistics and zero-order correlations (Pearson's r) showing jurors' short-term memory capacity, working memory capacity, information processing ability, the quantity of critical evidence noted down and recalled, and the overall quantity of correct trial information noted down and recalled.

Variable	Mean (±SD)	1	2	3	4	5	6
1. Short-term Memory	6.59(±1.89)	-					
2. Working Memory	3.29(±1.11)	.11	-				
3. Info Processing	34.06(±9.73)	.15	-.06	-			
4. Critical Notes	6.21(±2.61)	.26	-.04	.14	-		
5. Critical Recall	4.73(±1.84)	.12	.02	.04	.31*	-	
6. Correct Notes	24.41(±13.48)	.12	.09	.12	.77***	.18	-
7. Correct Recall	18.28(±7.37)	.03	.04	.19*	.21	.51***	.27*

Note: Short-term memory was measured with the letter span task, working memory was measured with the listening span task, information processing was measured with the word reordering task. * $p < .05$, *** $p < .001$

There were no significant associations between the quantity of notes taken and each of the individual differences (path a in the mediation model). However, Hayes (2013) suggests that a significant indirect effect may still be found even if one of the paths (either a or b) are not significant. The indirect effect is a result of multiplying path a and path b. Thus, it is possible to find a significant indirect effect when using the bootstrapping method in PROCESS. Therefore, simple mediation analyses were performed in the present study.

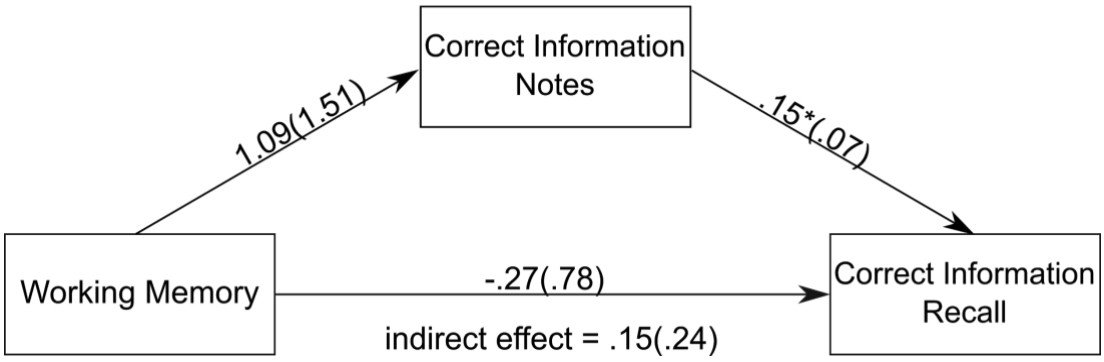
Two mediation models were performed for each of the individual differences (i.e., working memory storage capacity/short-term memory capacity/information processing ability). One model considered the quantity of correct trial information noted down and recalled, and the other model considered the quantity of critical evidence noted down and recalled. Each of the models explored: (1) the direct effect of each individual difference on jurors' recall, and (2) the indirect effect of each of the

individual differences on jurors' recall via the quantity of notes (mediator). The models included only those jurors who took notes during the trial.

5.3.1 Working memory

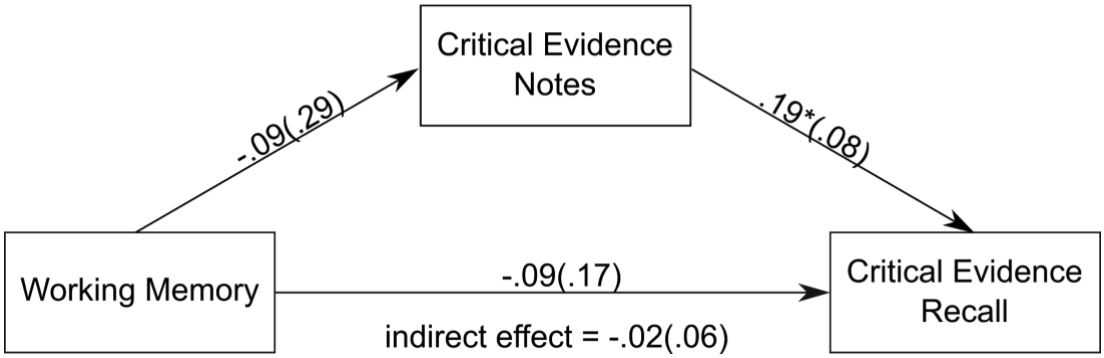
The first mediation analysis examined whether the quantity of correct information jurors wrote down during the trial mediated the association between working memory capacity and the quantity of correct information they recalled. A positive association was found between the quantity of notes taken and the quantity of trial information recalled (see Figure 5.2). However, there was a non-significant direct effect of working memory capacity on the quantity of correct trial information recalled, unstandardized estimate = -.27 (.78), p = .73, 95% CI = -1.83, 1.29. There was also a non-significant indirect effect of working memory capacity on recall through the quantity of correct notes made during the trial, unstandardized estimate = .15 (.24), 95% CI = -.19, .82, k^2 = .03, P_M = -1.25 (k^2 indicates a small effect size). This indicates that jurors' working memory storage capacity did not affect the quantity of correct notes they took during the trial. Additionally, jurors' working memory storage capacity did not have an indirect effect on recall via notes taken during the trial.

Figure 5.2. The mediation model showing the association between working memory capacity and the quantity of correct trial information recalled, with the quantity of correct trial information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <. 05



Furthermore, another model examined the effects relating to critical trial information noted down/recalled. There was a positive association between the quantity of critical evidence noted down and the quantity of critical evidence recalled (see Figure 5.3). There was a non-significant direct effect of working memory storage capacity on the quantity of critical evidence recalled, unstandardized estimate = .09 (.17), p = .61, 95% CI = -.26, .43. The indirect effect of working memory storage capacity on recall, through the quantity of critical evidence noted down during the trial, was also not significant, unstandardized estimate = -.02 (.06), 95% CI = -.18, .08, k^2 = 0.01, P_M = -0.26.

Figure 5.3. The mediation model showing the association between working memory capacity and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <. 05

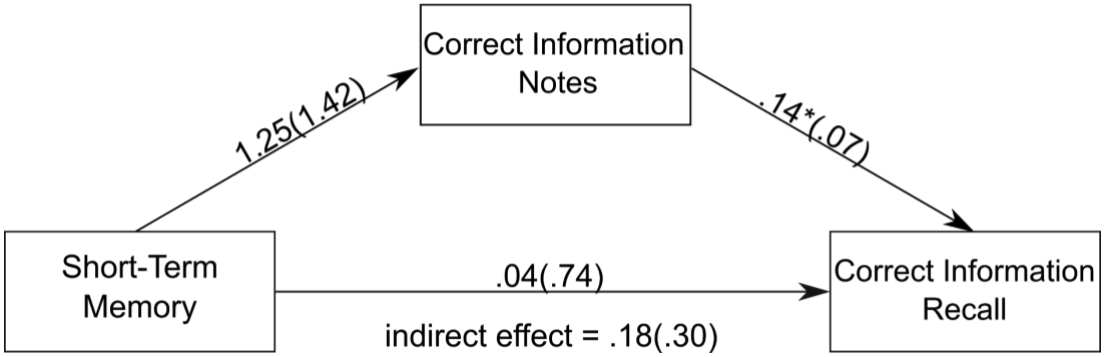


5.3.2 Short-term memory

As above, a simple mediation model tested whether the quantity of correct notes taken during the trial mediated the association between short-term memory storage capacity and correct recall of trial information. A positive association was found between the quantity of notes taken and the quantity of trial information recalled (see Figure 5.4). However, there was a non-significant direct effect of short-term memory capacity on the quantity of correct trial information recalled, unstandardized estimate = .04 (.74), p = .95, 95% CI = -1.44, 1.52. There was also a non-significant indirect effect of short-term memory capacity on recall through the quantity of correct

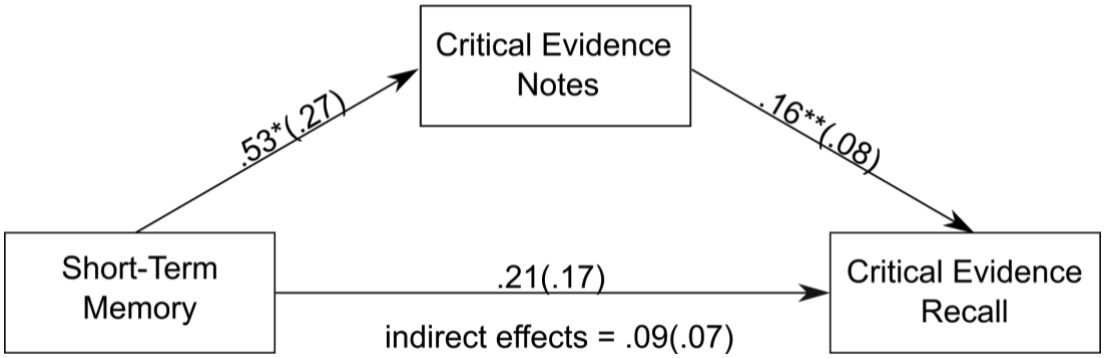
notes made during the trial, unstandardized estimate = .18 (.30), 95% CI = -0.26, .93, $k^2 = 0.03$, $P_M = 0.68$, (k^2 indicates a small effect size). This indicates that jurors' short-term memory capacity did not affect the quantity of correct notes they took during the trial. Additionally, jurors' short-term memory storage did not have an indirect effect on recall via notes taken during the trial.

Figure 5.4. The mediation model showing the association between short-term memory capacity and the quantity of correct trial information recalled, with the quantity of correct trial information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <. 05



Furthermore, another mediation was conducted on the quantity of critical evidence noted down and recalled. A positive association was found between the quantity of critical evidence jurors noted down and the quantity of critical evidence recalled (see Figure 5.5). There was a non-significant direct effect of short-term memory capacity on the quantity of critical evidence recalled, unstandardized estimate = .21 (.17), p = .21, 95% CI = -.12, .55. However, there was a significant indirect effect of short-term memory capacity on recall through the quantity of critical evidence noted down during the trial, unstandardized estimate = .09 (0.07), 95% CI = .01, .29, k^2 = 0.07, P_M = 0.29, (k^2 indicates a medium effect size). More specifically, jurors with higher levels of short-term memory capacity recalled a greater quantity of critical evidence, through writing down the most critical evidence during the trial.

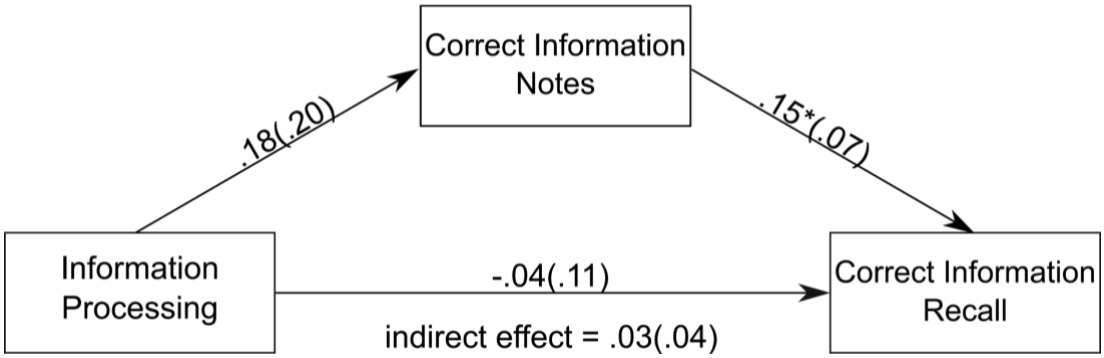
Figure 5.5. The mediation model showing the association between short-term memory capacity and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p =.05, ** p <.05



5.3.3 Information Processing

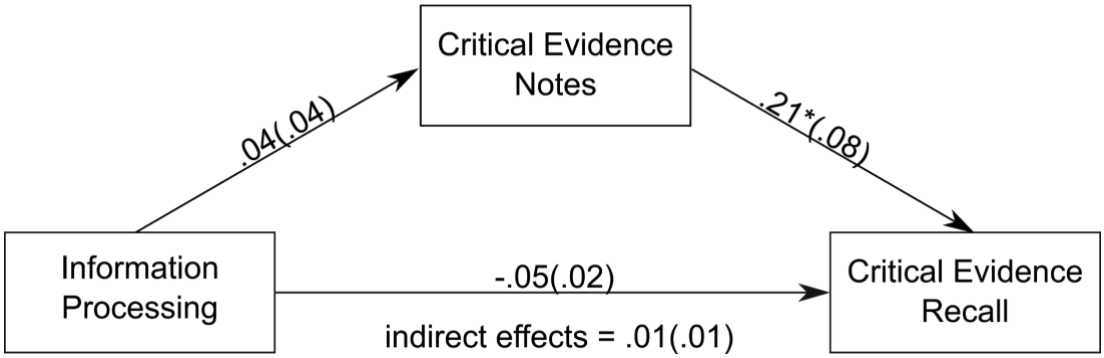
A mediation analysis examined whether the quantity of notes taken during the trial mediated the association between information processing ability and correct recall of trial information. A positive association was found between the quantity of notes taken and the quantity of trial information recalled (see Figure 5.6). However, there was a non-significant direct effect of information processing on the quantity of correct trial information recalled, unstandardized estimate = -.04 (.11), p = .68, 95% CI = -.25, .17. There was also a non-significant indirect effect of information processing recall through the quantity of correct notes made during the trial, unstandardized estimate = .03 (.04), 95% CI = -.02, .14, k^2 = 0.03, P_M = -1.67 (k^2 indicates a small effect size). This indicates that jurors' information processing did not affect the quantity of correct notes they took during the trial. Additionally, jurors' information processing did not have an indirect effect on recall via notes taken during the trial.

Figure 5.6. The mediation model showing the association between information processing ability and the quantity of correct trial information recalled, with the quantity of correct trial information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <.05



In addition, another model tested the effects regarding critical evidence noted down and recalled. A positive association was found between the quantity of critical evidence noted down and the quantity of critical evidence recalled (see Figure 5.7). There was a non-significant direct effect of information processing on the quantity of critical evidence recalled, unstandardized estimate = -.05 (.02), p = .05, 95% CI = -.09, .001. Additionally, there was a non-significant indirect effect of information processing on recall, through the quantity of critical evidence noted down during the trial, unstandardised estimate = .01 (.01), 95% CI = -.01, .04, k^2 = 0.06, P_M = 0.25 (k^2 indicates a small effect size).

Figure 5.7. The mediation model showing the association between information processing ability and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <. 05



5.3.4 Verdict

Sixty-six per cent of jurors reached a guilty verdict: 65% in the note-taking condition and 67% in the non-note taking condition. A logistic regression was conducted to determine whether the amount of incriminating evidence and the amount of non-incriminating evidence jurors recalled predicted their verdict (0 = not guilty, 1 = guilty). The model significantly predicted the likelihood of jurors reaching a guilty verdict, correctly identifying 77.6% of cases ($x^2(2) = 31.64$, Cox & Snell $R^2 = .31$, Nagelkerke $R^2 = .43$, p <.001). The amount of incriminating evidence recalled statistically predicted guilty verdicts reached by jurors, B = .72 (SE = .22), Wald = 10.96, p =.001; OR = 2.05, 95% CI = 1.34, 3.14, such that for every additional piece of incriminating evidence recalled, jurors were 2.05 times more likely to reach a guilty verdict. The amount of non-incriminating evidence recalled again negatively predicted jurors' guilty verdicts, B = -.75 (SE = .23), Wald = 10.91, p =.001; OR = 0.47, 95% CI = 0.30, 0.74, such that for every piece of non-incriminating evidence recalled, jurors were 2.13 times less likely to reach a guilty verdict.

Further, another logistic regression was conducted to examine whether the condition that these jurors were in predicted their verdict. As expected, and as found

in Study 1, no effect was observed, $x^2(1) = 0.01$, Cox & Snell $R^2 < .01$, Nagelkerke $R^2 < .01$, $p = .92$.

5.3.5 Benefits of note taking

An independent t-test was used to examine whether note-taking jurors recalled more correct trial information than non-note taking jurors. In line with results from Study 1, note taking jurors recalled significantly more correct trial information (M = 19.72, SD = 7.11) than jurors who did not take notes (M = 15.19, SD = 7.07), $t(83)$ = 2.75, p =.007 , d = 0.64.

5.4 Discussion

The main aim of this study was to examine the associations between jurors' working memory storage capacity, short-term memory storage capacity, information processing ability and the amount of notes they make during trials, and the volume of trial evidence they recall. Working memory was not found to be associated with jurors' notes and recall of correct trial information and critical evidence. Furthermore, no significant associations were found between jurors' information processing ability and the quantity of critical evidence and correct evidence jurors noted down and recalled. No associations were found between short-term memory and the quantity of correct trial information noted down and recalled. However, jurors with higher levels of short-term memory storage capacity recalled a greater amount of critical evidence, and this was via a greater amount of critical evidence noted down. In addition, the present study found the type of trial evidence jurors predominantly recall to be associated with their verdicts. More specifically, jurors who recalled more incriminating evidence were more likely to find the defendant guilty, whereas jurors who recalled more non-incriminating evidence were less likely to find the defendant guilty. Lastly, it was also demonstrated that (1) note taking jurors recalled more correct trial information when compared to non-note taking jurors; (2) the amount of notes jurors made was positively related to the amount of trial information they later recalled, and (3) jurors' verdicts were not found to be related to the condition they were in (i.e., no note taking vs note taking).

The present study demonstrated that jurors' short-term memory storage capacity was significantly related to note taking whereas jurors' working memory storage capacity was not significantly related to note taking. It is surprising to find one type of memory storage to be significant when the other is not significant. Whilst jurors are note taking, both their short-term memory and working memory capacity are fully engaged with the current information. As such, those with lower storage capacity may be unable to store and process the incoming information in memory and they subsequently fail to encode it or note it down. Thus, it is reasonable to assume that an adequate measure of short-term memory capacity would be associated with note taking. This has been confirmed by the present study. However, presumably working memory capacity should be a better predictor of note taking during trials as it captures more accurately the complexity of the processes involved in note taking (i.e., storing, processing, manipulating incoming information). Therefore, it is surprising that this association was not found in the present study.

There are a few plausible explanations for the lack of a significant association. First, it is possible that the working memory task (a listening span task) used in the present study does not accurately measure the demands placed on working memory by note taking. This is the most likely explanation for the lack of significant associations between working memory capacity and notes demonstrated by the present and previous studies (Peverly et al., 2014, 2013). Working memory has previously been found to be associated with the number of ideas included in lecture notes (Hadwin et al., 1999) and test performance (Daneman & Carpenter, 1980). However, previous studies used different working memory tasks (i.e. a reading span task and a combined score of three memory span tasks) to the one used in the present study, suggesting that the association may be sensitive to the type of working memory task employed. Further research using a battery of working memory tasks is needed to clarify the association between working memory and note taking. Second, it may be that note taking strategies play a role. One study has demonstrated a significant association between lecture note taking and students' working memory storage capacity when students were asked to organise their notes but not when they were asked to record everything that was said (Bui et al., 2013). This suggests that note taking strategies may affect the association between working memory and note taking (Bui & Myerson, 2014). Whilst

the present study did not examine jurors' note taking strategies, it may be that working memory storage capacity was not significantly associated with note taking in the present study as jurors were not asked to organise their notes and they were simply writing down everything presented during the trial (in a pure transcription style). Lastly, some jurors took longer than others to fill in the verdict questionnaire which was completed immediately after the trial video ended and before the free recall test. Such delay between encoding the trial information and recollecting it may mean that working memory and short-term memory was not accurately tested for those jurors.

Furthermore, the hypothesis that there would be a positive association between jurors' information processing ability and the quantity of correct trial information/critical evidence noted down and recalled was not supported. No significant associations were found between jurors' information processing ability, notes, and recall. This contradicts previous findings (Kiewra & Benton, 1988) which demonstrated that students with higher information processing ability took better notes and recalled more lecture material. In the present study, notes were assessed for the quantity of correct trial information and the quantity of critical evidence, whereas Kiewra and Benton (1988) assessed students' notes for the amount of complex propositions and main ideas. Thus, the information processing ability might be related to a specific type of information which was not measured in the present study. Further research is needed to clarify such associations.

The present study found that jurors' verdicts were statistically predicted by the type of critical evidence they predominantly recalled. More specifically, jurors who recalled more incriminating evidence were more likely to find the defendant guilty, and those who recalled more non-incriminating evidence, were less likely to find the defendant guilty. This is consistent with the findings from the previous study and further confirms the importance of jurors being able to recall critical trial evidence.

Lastly, the present results provide further evidence that note taking during trials is beneficial. More specifically, jurors who were permitted to take notes during trials recalled more correct trial information when compared to those who did not take notes. This finding is consistent with a number of previous studies (e.g., Thorley et al., 2016). Furthermore, the present study showed that the more trial information jurors are able

to note down the more trial information they subsequently recall, which is in line with previous research (e.g., Rosenhan et al., 1994).

In sum, the present study is the first to demonstrate that individual differences in short-term memory storage capacity have an effect on how much critical evidence jurors are able to note down during a trial and more importantly how much critical evidence they subsequently recollect. Further, no significant associations were found between jurors' working memory storage capacity, information processing ability and note taking or recall. Past research indicates that individual differences in attentional resources may play an important role in note taking (Peverly et al., 2014). Thus, the next study will investigate the impact of individual differences in jurors' sustained and divided attention capacity on note taking during trials and recall of trial information. It will also further examine the association between the type of evidence jurors recall and their verdicts.

Chapter 6: Individual differences in jurors' attention

6.1 Introduction

The main aim of the study was to investigate the associations between jurors' sustained attention capacity and divided attention capacity, the quantity of correct notes they take during a trial, and the quantity of correct trial information they subsequently recall. In addition, the associations between sustained and divided attention, and the quantity of critical evidence recorded in notes and recalled were also investigated. Further, the present study assessed the association between the type of evidence jurors predominantly recalled and their verdicts.

Jurors must stay attentive throughout trials and focus on the evidence presented as they need to encode as much information as possible to be able to remember it when reaching verdicts. Trials, however, vary in length and can last from a few hours to a few months, and occasionally years. Trials may, therefore, place substantial demands upon jurors' limited cognitive resources. Thus, jurors' ability to focus on trial evidence over long periods of time (sustained attention) and their ability to split attention between note taking and listening to trial proceedings (divided attention) may be associated with their note taking during trials, which may subsequently be associated with their recall of trial information.

In one study from the educational psychology literature, students' sustained attention was positively associated with lecture note taking, and the more notes students took the more lecture material they subsequently recalled (Peverly et al., 2014). This is in line with other studies (Gleason, 2012; Vekaria, 2011). The overload theory states that attentional resources become exhausted when attempting to maintain focus on the same information for extended periods of time (Grier et al., 2003; Parasuraman et al., 1987). Although jurors do get a break overnight, they are required to pay attention for hours at a time each day. Given that trials often last days or weeks, sustained attention may be an important factor affecting jurors' note taking during trials and their recall of trial evidence.

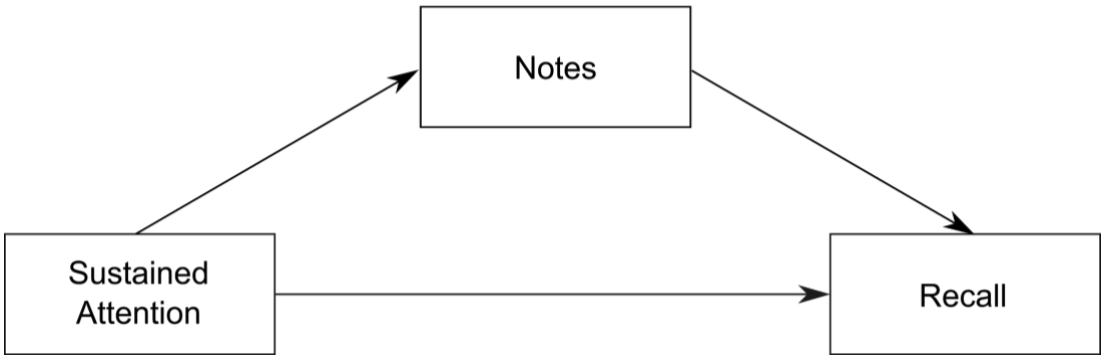
Furthermore, others have found that if participants are required to divided their attention between two tasks their memory performance on free recall, cued recall, and recognition of words lists decreases (Craik et al., 1996; Dewhurst et al., 2007). Such

studies examined divided attention using tasks that divert attention away from the to-be-learned information during encoding which is detrimental to memory. However, note taking typically focuses mock jurors' attention on the to-be-learned information at encoding which may benefit memory. It is reasonable to question whether jurors' divided attention capacity may have an effect on their note taking and encoding of the trial content. When required to divide attention, jurors may have less time to process and encode incoming trial information because they need to simultaneously take notes (Craik et al., 1996). Alternatively, it may be that dividing attention reduces the number of attentional resources jurors have available for processing trial information (Kiewra, 1985). It is currently unknown whether note taking diverts jurors' attention away from the trial or whether it helps them focus on the trial. Thus, the present study explored the association between mock jurors' divided attention capacity and the amount of correct trial information/critical evidence noted down and recalled.

In the present study, participants' sustained and divided attention capacity were assessed. Next, they watched the trial video with two-thirds being permitted to take notes, as previously done in the study reported in Chapter 4. After the video ended, half of all the note takers had their notes confiscated before recall. Each participant was then asked to reach a verdict, and then freely recalled all trial information she/he could remember from the trial video.

In line with the findings from the educational psychology literature (Peverly et al., 2014), it was hypothesised that mock jurors with higher levels of sustained attention capacity would note down more pieces of correct trial information/critical evidence during the trial, and that they would subsequently recall the most correct trial information/critical evidence. As in the previous studies, the associations were explored using a mediation model (see Figure 6.1).

Figure 6.1. Model of relations between sustained attention, recall, and notes (mediator).



Furthermore, the present study explored the association between jurors' divided attention capacity and the quantity of correct trial information/critical evidence noted down and recalled. It is theoretically plausible to assume that jurors with higher levels of divided attention would take more notes during the trial and would subsequently recall more information from the trial. The associations were again tested with a mediation model.

In addition, this study attempted to replicate the findings from the previous which indicated that the type of critical evidence (i.e., incriminating, non-incriminating) mock jurors predominantly recall can statistically predict their verdicts. In line with the findings from the two previous studies, it was hypothesised that those who recall the most incriminating (non-incriminating) evidence would be more likely to reach a guilty (not guilty verdict).

Lastly, in line with previous findings (e.g., Rosenhan et al., 1994; Thorley et al., 2016), the current study tested a number of predictions with regards to note taking during trials: (1) note taking jurors would recall more correct trial information than non-note takers; (2) the more trial information jurors write down, the more trial information they would then recalled; (3) jurors who have access to their notes during the memory test would not recall more than those with no access to their notes; (4) the condition (i.e., note taking with access at retrieval, note taking with no access at retrieval, non-note taking) and verdicts would not be associated.

6.2 Method

6.2.1 Participants and design

One hundred thirty-four participants (24 male participants) between 18 and 59 years of age (M = 22.91, SD = 8.90) acted as mock jurors (henceforth called 'jurors'). All were eligible for jury service in England and Wales. They were a combination of undergraduate students and university staff who received payment in the form of either course credit or a £10 voucher. Jurors were assigned to one of three conditions: note taking with notes available during the memory test (N = 54), note taking with notes unavailable during the memory test (N = 53), and non-note taking (N = 27). Participants were assigned to conditions in the same manner as in the previous study (i.e. a quasi-random method).

The current study had a correlational design. The statistical predictor variables were: (1) sustained attention (as measured by the Lottery test) and (2) divided attention (as measured by the Dual Task). The dependent variables included: (1) the quantity of correct trial information noted down; (2) the quantity of correct trial information recalled; (3) the quantity of critical evidence noted down; (4) the quantity of critical evidence recalled; and (5) verdict.

6.2.2 Stimuli

The Lottery subtest of the Test of Everyday Attention (Robertson, Ward, Ridgeway, & Nimmo-smith, 1996) was used to measure sustained attention, which is the ability to maintain attention to a constant and boring task. Jurors listened to a pre-recorded 10-min audio file containing strings of numbers and letters which represented 'lottery tickets' (e.g., BC143). Whilst doing this, they were instructed to listen out for winning tickets. The winning tickets were those that ended in 55. Upon hearing these numbers, they were asked to immediately write down the two letters preceding them. Jurors received one point for every correct set of letters written down and could achieve a maximum score of 12 points.

The Dual Task technique, pioneered by Baddeley and Hitch (1974), is commonly used to measure the impact of dividing attention during encoding on

subsequent memory performance (Craik et al., 1996; Naveh-Benjamin et al., 2014). The task was designed in PsychoPy (Peirce, 2007) and included two parts: a Single Reaction Time (RT) task and a Dual RT task. During the Single RT task, jurors listened to 30 auditory beeps distributed randomly at intervals with a Mean of 10 seconds (range 5-15 seconds). Jurors were instructed to respond to each beep as fast as possible by pressing the spacebar with their non-dominant hand. Their response time was recorded. Jurors' baseline RT was calculated by computing the Mean score for the last 25 responses (the first five responses were considered practice trials). The Dual RT Task required jurors to simultaneously perform two tasks: the RT task and a writing task. In the writing task, all jurors were instructed to compose an essay on the pros and cons of a proposed increase in student tuitions fees. They were provided with an A4 notebook and a pen. If jurors finished their first essay before the RT task was over, they were instructed to immediately start writing a second essay which involved describing their favourite book or film. Jurors were told to concentrate fully on writing the essay but to try to respond to the beeps as rapidly as possible by pressing the spacebar with their non-dominant hand. The beeps were distributed randomly at intervals with a Mean of 30 seconds (range 15-45 seconds). The Dual RT task provided a measure of jurors' RT during divided attention, which was calculated by computing the Mean RT score for the last 25 responses.

During both RT tasks, jurors positioned their non-dominant hand on top of a sketch of a hand positioned in front of the keyboard. The researcher ensured that the sketch was correctly positioned to ensure that all jurors' hands were at an equivalent distance to the keyboard on all trials (so RTs would not be influenced by hand position). The interference in RT was calculated by subtracting the baseline RT from the Dual RT. This provided the final divided attention score which is a measure of cognitive effort devoted to writing while listening. Both RT tasks lasted approximately 20 minutes.

As in the earlier studies, jurors watched the criminal trial video (see Chapter 3, Section 3.3 for a description). Those in the note taking conditions were given blank notebook and pens. All jurors were given the demographic/verdict questionnaire asking to provide demographic information (i.e., age, and gender) and indicate their

verdict (i.e., guilty or not guilty). For the recall test, they were given 10-page A4 lined booklets.

6.2.3 Procedure

Jurors arrived at a computer laboratory in groups of up to two but they were tested individually. Upon arrival, they were seated at individual PCs. All PCs were separated by desktop screen dividers, so jurors could not see each other during the experiment. They were asked to read the participant information sheet and sign the consent form. Then, jurors completed the Dual Task and the Lottery task, with the task order counterbalanced. They then watched the trial video. The researchers informed jurors that once the video was over they would be asked to reach a verdict and answer questions about the trial. No explicit reference was made to a memory test. They were also informed whether or not they would be allowed to take notes during the trial. All note taking jurors were given a blank notepad and pen. After the video, all jurors were asked to complete the demographic/verdict questionnaire. Next, all jurors completed the free recall test by writing down as much trial information as they could remember with no time limit. Half of the note takers were allowed to consult their notes throughout the memory test whereas the other half had their notes confiscated before the test. Once jurors had completed the free recall test, they were debriefed and the study ended. The study lasted approximately 80 minutes.

6.2.4 Coding

All notes and free recall responses were scored for the quantity of correct and incorrect trial information. Jurors made very few errors in their notes (M = 0.26, SD = 0.56) and free recall responses (M = 0.37, SD = 0.63). Therefore, similar to the two previous studies, the main analysis was conducted on the volume of correct information noted down and recalled only. In addition, all notes and free recall responses were scored for the quantity of correct critical trial evidence they contained (total, incriminating, non-incriminating). For further information regarding coding see Chapter 3 (Section 3.5).

One independent rater, blind to the aims of the study, scored 20% of jurors' notes and free recall responses in order to check them for inter-rater reliability. The

inter-rater agreement between the original rater and independent rater was 83% for notes and 81% for free recall. All disagreements were resolved by the original rater and an independent reviewer who compared them and determined the correct score.

6.3 Results

Correlational analyses were used to examine the associations between sustained attention, divided attention, critical evidence noted down and recalled, correct trial information noted down, and recalled (see Table 6.1).

Table 6.1

Descriptive statistics and zero-order correlations (Pearson's r) showing jurors' sustained attention, divided attention, the quantity of critical evidence noted down and recalled, and the overall quantity of correct trial information noted down and recalled.

Variable	Mean (±SD)	1	2	3	4	5
1. Sustained Attention	9.36(±1.71)	-				
2. Divided Attention	0.23(±0.17)	-.04	-			
2. Critical Notes	6.76(±2.84)	.26**	-.13	-		
3. Critical Recall	6.39(±2.16)	.19*	.21*	.52***	-	
4. Correct Notes	26.21(±13.59)	.24*	-.12	.76***	.39***	-
5. Correct Recall	22.87(±9.48)	.09	-.06	.41***	.67***	.49***

Note: Sustained attention was measured with the lottery task, divided attention was measured with the dual task. * $p < .05$, ** $p < .01$, *** $p < .001$

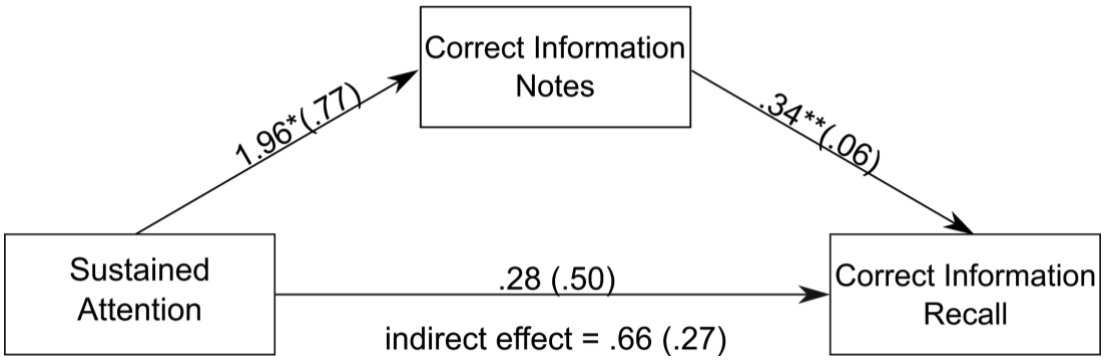
Separate mediation models were conducted for sustained attention and divided attention. The models examined the indirect and direct paths from both types of attention to recall. For each type of attention, two simple mediation models were performed: one for the quantity of correct information recalled and another one for the quantity of critical evidence recalled. The first mediation analysis tested whether the quantity of correct notes taken during the trial mediated the association between attention and the quantity of correct information recalled. The second mediation

analysis examined whether the quantity of critical evidence noted down during the trial mediated the association between divided attention and the quantity of critical evidence recalled. All analyses were conducted using Hayes's (2013) PROCESS version 2.16.1 for SPSS.

6.3.1 Sustained attention

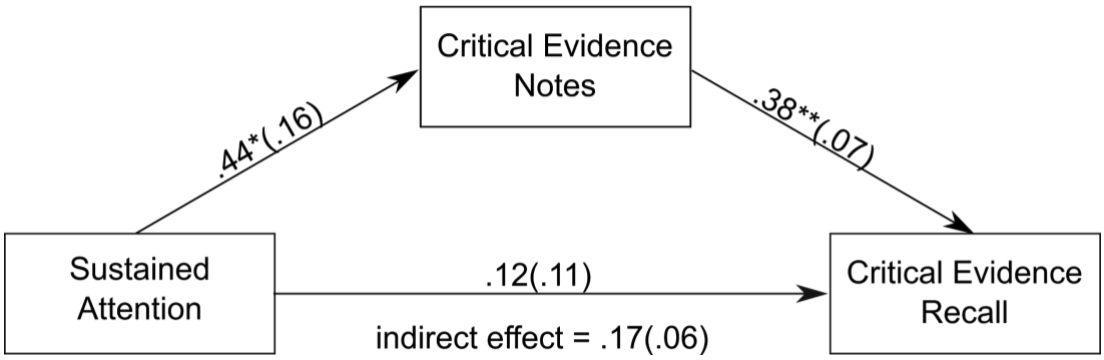
Sustained attention was found to be positively associated with the volume of correct notes taken. There was also a positive association between the volume of notes taken and the amount of trial information recalled. Figure 6.2 shows a non-significant direct effect of sustained attention on the amount of correct trial information recalled, unstandardized estimate = .28 (SE=.50), p = .58, 95% CI = -.72, 1.27. There was a significant indirect effect of sustained attention on recall of trial information through the volume of correct notes taken, unstandardized estimate = .66 (SE=.26), 95% CI = .25, 1.27, $k^2 = 0.11$, $P_M = 0.66$ (k^2 indicates a medium effect size). More specifically, jurors with the highest levels of sustained attention made the most correct notes during the trial, which subsequently increased the volume of trial information they remembered.

Figure 6.2. The mediation model showing the association between sustained attention and the quantity of correct information recalled, with the quantity of correct information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <.05; ** p <.001



In addition, another simple mediation analysis was performed for critical evidence. Jurors with higher sustained attention capacity noted down a greater amount of critical evidence. There was also a positive association between the amount of critical evidence jurors noted down and the amount of critical evidence they recalled. Figure 6.3 shows a non-significant direct effect of sustained attention on the amount of critical evidence recalled, unstandardised estimate = .12 (SE =.11), p = .27, 95% CI = -.10, .35. The indirect effect was significant where jurors with higher sustained attention capacity recalled a greater amount of critical evidence via the amount of critical evidence noted down during the trial, unstandardised estimate = .17 (SE =.06), 95% CI = .06, .32, k^2 = 0.14, P_M = 0.57 (k^2 indicates a medium effect size).

Figure 6.3. The mediation model showing the association between sustained attention and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). * p <.05; ** p <.001

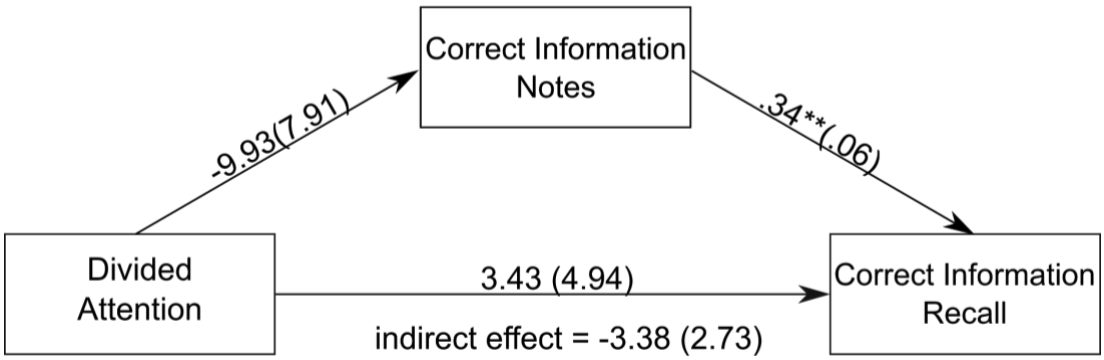


6.3.2 Divided attention

No association was found between divided attention and the volume of correct notes, There was a positive association between the volume of notes taken and the amount of trial information recalled (see Figure 6.4). Further, there was a non-significant direct effect of divided attention on the amount of correct trial information recalled, unstandardized estimate = 3.43 (4.94), p = .49, 95% CI = -6.38, 13.23. There was also a non-significant indirect effect of divided attention on recall through the volume of correct notes made during the trial, unstandardized estimate = -3.38 (2.73),

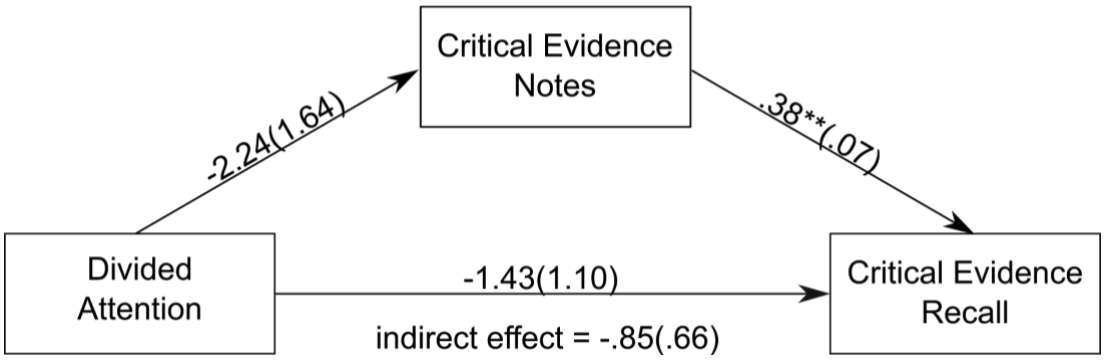
95% CI = -10.08, - .99, k^2 = 0.07, P_M = 0.38 (k^2 indicates a small effect size). This indicates that jurors' divided attention levels did not affect the volume of correct notes they took during the trial. Additionally, divided attention did not have an indirect effect on recall via notes taken during the trial.

Figure 6.4. The mediation model showing the association between divided attention and the quantity of correct information recalled, with the quantity of correct information noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). **p <.001



Divided attention capacity was not associated with the amount of critical evidence noted down during the trial, which was unexpected. However, as above, jurors who noted down a greater amount of critical evidence recalled a greater amount of critical evidence. Figure 6.5 shows a non-significant direct effect of divided attention on the amount of critical evidence recalled, unstandardised estimate = -1.43 (SE =1.10), p = .20, 95% CI = -3.60, .75. Unlike the sustained attention model, no significant indirect effect of volume of critical evidence noted down during the trial was found, unstandardised estimate = -.85 (SE =.66), 95% CI = -2.49, .13, k^2 = 0.07, P_M = 0.37 (k^2 indicates a small effect size).

Figure 6.5. The mediation model showing the association between divided attention and the quantity of critical evidence recalled, with the quantity of critical evidence noted down as the mediator. Values on paths are unstandardised regression coefficients (SEs). ** p <.001



6.3.4 Verdict

Fifty-three percent of jurors reached a guilty verdict: 41% in the access to notes during retrieval condition, 60% in the no access to notes during retrieval condition and 63% in the non-note taking condition.

A logistic regression was performed to assess whether the amount of incriminating evidence and the amount of non-incriminating evidence jurors recalled predicted their verdict (0 = not guilty, 1 = guilty), as done in Studies 1 and 2. The overall model significantly predicted the likelihood of jurors reaching a guilty verdict, correctly identifying 67.2% of cases ($x^2(2) = 29.86$, Cox & Snell $R^2 = .20$, Nagelkerke $R^2 = .27$, $p < .001$). The amount of incriminating evidence recalled statistically and positively predicted the likelihood of guilty verdicts being reached by jurors, B = .44 (SE = .14), Wald = 9.24, $p = .002$; OR = 1.55, 95% CI = 1.17, 2.04, such that for every additional piece of incriminating evidence recalled, jurors were 1.55 times more likely to reach a guilty verdict. Further, the amount of non-incriminating evidence recalled negatively predicted the likelihood of guilty verdicts, B = -.48 (SE = .13), Wald = 14.71, $p < .001$; OR = 0.62, 95% CI = 0.48, 0.79, such that for every piece of non-incriminating evidence recalled, jurors were 1.61 times less likely to reach a guilty verdict.

Another logistic regression was conducted to test whether the condition predicted verdicts. In line with the previous results, no effect was observed ($x^2(2)$ = 5.52, Cox & Snell R^2 = .04, Nagelkerke R^2 = .05, p = .06).

6.3.4 Benefits of note taking and note access at retrieval

An independent t-test was carried out to examine whether jurors who took notes during the trial recalled more correct trial information than those who did not take notes. Note taking jurors recalled significantly more correct trial information (M = 24.35, SD = 9.54) than non-note taking jurors (M = 17.04, SD = 6.61), $t(132) = 3.75$, $p < .001$, d = 0.88.

Another independent t-test was performed to investigate whether it was the process of taking notes during encoding or the ability to access these notes at retrieval (i.e. during the memory test) that was beneficial to recall. Consistent with Study 1, there was no significant difference in the amount of information recalled by note takers who could not access their notes during the memory test (M = 26.24, SD = 13.23), and those who had access to their notes during the memory test (M = 26.17, SD = 14.08), $t(105) = .03$, p = .98, d = 0.01.

6.4 Discussion

The present study examined the associations between jurors' sustained and divided attention capacity, note taking during trials and recall of trial evidence. Sustained attention was found to be positively associated with the quantity of trial information and critical evidence jurors noted down. In addition, sustained attention was positively associated with the quantity of trial information and critical evidence jurors recalled through noting down more trial information and critical evidence during the trial. However, divided attention was not found to be significantly associated with note taking or recall. Furthermore, jurors who recalled more incriminating evidence were more likely to reach a guilty verdict, whereas those who recalled more non-incriminating evidence were more likely to reach a not guilty verdict. In addition, the present study found that: (1) note taking enhances recall of trial information; (2) the

more trial information jurors note down, the more trial information they recall; (3) having access to notes during the memory test does not further enhance recall; (4) the condition jurors are in (i.e, note taking with access at retrieval, note taking with no access at retrieval, non-note taking) does not impact upon their verdicts.

This is the first study to show that jurors' sustained attention capacity is positively associated with the quantity of notes taken during trials. More specifically, jurors with higher levels of sustained attention capacity noted down more correct trial information and critical evidence. In addition, those with higher levels of sustained attention recalled more correct trial information/critical evidence, which was via taking more notes of correct trial information/critical evidence while they watched the trial. This supports previous findings from the educational psychology literature where student sustained attention was associated with lecture note taking (Peverly et al., 2014) and extends them to a new domain. These findings may be interpreted in terms of the overload theory, which suggests individuals' attentional resources can become exhausted when attempting to maintain focus on the same information (e.g., trial evidence) for extended periods of time (Grier et al., 2003; Parasuraman et al., 1987). That is, jurors with lower levels of sustained attention capacity may find it more difficult to maintain focus on a trial for a long period of time, which subsequently results in fewer notes being taken and subsequently jurors recollecting less trial evidence.

Furthermore, the present study found no significant associations between jurors' divided attention capacity and the quantity of correct trial information/critical evidence they noted down and recalled. This finding is surprising as it is plausible to assume that divided attention would play a role in note taking. It is not clear why divided attention did not predict jurors' note taking and recall. It may be that the act of note taking focuses jurors' attention on the evidence presented during the trial and thus, jurors' attention is not truly divided. Consequently, juror note taking and recall may not be affected by their divided attention capacity. An alternative explanation is that this non-significant finding may be a result of the inclusion of undergraduate students in the present sample. The students who took part in the study would have had prior experience of taking notes whilst listening to lecture material. The evidence

suggests that individuals who have extensive practice at simultaneously reading stories and writing dictated words are less affected by the demands of dividing attention between these tasks (Spelke, Hirst, & Neisser, 1976). Perhaps the students' prior experience of note taking during lectures meant the cognitive demands of note taking were less profound than would be found in a population with little or no experience. Thus, future research should consider investigating the associations between divided attention, note taking and recall in non-student samples.

Additionally, the current study demonstrated that jurors who recalled more incriminating evidence were more likely to indicate that the defendant was guilty. In addition, those who recalled more non-incriminating evidence were more likely to state that the defendant was not guilty. The current findings replicate the findings from the two earlier studies and further confirm that jurors' recollection of critical trial evidence is associated with their verdicts.

Lastly, the present results confirmed a number of other findings. First, note taking during trials significantly enhanced jurors' recall of trial information, supporting previous research findings (e.g., Thorley et al., 2016). Furthermore, the more trial information jurors note down the more trial information they then recall which is in line with previous studies (e.g., Rosenhan et al., 1994). Allowing jurors to consult their notes during the memory test did not result in further memory enhancement which is in line with prior research (e.g., ForsterLee et al., 1994). Finally, whether jurors were allowed to take notes during trials or not was not associated with their verdicts, consistently with prior findings (e.g., Thorley et al., 2016).

Taken together, the present study is the first to demonstrate that jurors' sustained attention capacity, but not divided attention capacity, has a direct effect on note taking and an indirect effect on recall. Those with higher sustained attention capacity are able to write more notes, and this influence their recall of trial information. In addition, verdicts are influenced by the type of critical evidence jurors predominantly recall. Such that, jurors who recollected a greater quantity of incriminating evidence were more likely to reach a guilty verdict, whereas those who recalled more non-incriminating evidence were more likely to reach a not guilty verdict.

Chapter 7: Individual differences in jurors' prior trial experience

7.1 Introduction

The present study aimed to investigate the role of prior trial experience on jurors' note taking during trials and their recall of trial evidence. Although note taking has been shown to facilitate recall of trial information (Hope et al., 2014; Rosenhan et al., 1994; Thorley et al., 2016), all of the empirical studies assessed juror note taking and recall in relation to a single mock trial. However, real jurors may be required to serve on more than one trial, as indicated by the UK government website ("Jury service," 2018). Empirical evidence has demonstrated that, in the UK, 19 per cent of 361 real jurors had previously served as a juror (Matthews et al., 2004) and in the US, 20 per cent out of 902 real jurors served on one previous trial (Dillehay & Nietzel, 1985). Findings from the educational psychology literature suggest that students with more prior lecture experience note down more lecture material when compared to those will less experience (Hartley & Cameron, 1967; Hartley & Marshall, 1974) and their notes contain more words, main points, and minor points when compared to students with less prior experience (Nye, 1978). Therefore, such findings suggest that students' note taking skills improve with experience.

To date, no study has investigated whether serving on more than one trial impacts upon juror's note taking and recall on subsequent trials. Therefore, this experimental study examined whether jurors' prior trial experience influences note taking and recall of trial evidence. In addition, the present study explored the association between the type of evidence jurors predominantly recall and the verdicts they reach using a novel trial video, namely a mock civil trial. This was done to investigate whether the earlier findings, reported in this thesis, from the criminal trial video could be extended to civil trials.

In the present study, all jurors attended two experimental sessions. In each session, they watched a different trial video (counterbalancing criminal and civil trial videos) whilst taking notes. All jurors then had their notes confiscated. After that, they individually reached a verdict. Lastly, they freely recalled as much trial information as they could remember and completed a recognition test asking them to indicate whether statements about the trial were true or false.

A number of findings were expected. In line with the findings from the educational psychology literature (Nye, 1978), it was hypothesised that jurors would record more pieces of correct trial information and critical evidence in their notes during session two when compared to session one. It was also hypothesised they would be likely to recall a greater volume of correct trial information and critical evidence in session two when compared to session one. In other words, jurors would become better at note taking and have better memory as a result of prior experience. Jurors would also potentially score higher on the recognition test in session two as opposed to session one. The recognition test measured jurors' ability to correctly recognise trial details whereas the free recall test measured their ability to recollect trial evidence from memory. Perhaps prior trial experience has the potential to impact not only the amount of trial evidence jurors' freely recall but also how well they can recognise correct trial evidence, as a result of noting down more correct and critical information over time.

The present study also explored whether the amount of incriminating and non-incriminating evidence jurors recalled would influence their verdicts. The earlier studies reported in this thesis found that in a criminal trial jurors who remembered the most incriminating evidence were more likely to reach a guilty verdict, and those who recalled the most non-incriminating evidence were more likely to reach a not guilty verdict. Thus, it was hypothesised that a similar effect would be observed in the present study. In addition, similar trends were expected to be found in the civil trial, such that jurors who remember more incriminating (non-incriminating) evidence would be more likely to reach a legally culpable (not culpable) verdict.

7.2 Method

7.2.1 Participants and design

Sixty participants acted as mock jurors (6 male participants). All were between 18 and 24 years of age (M = 18.8, SD = 1.0). Participants were drawn from a first year psychology undergraduate student sample and received a payment in the form of course credit. All were eligible for jury service in England and Wales.

The present study had a within-subjects design. The independent variable was time (session one and session two). The main dependent variables were: (1) the quantity of correct trial information noted down, (2) the quantity of correct trial information recalled; (3) the quantity of critical trial evidence noted down; (4) the quantity of critical trial evidence recalled; (5) the accuracy on the recognition test; and (6) the verdict.

7.2.2 Stimuli

Two trial videos were used in the present study: a criminal trial and a civil trial (see Chapter 3, Section 3.3 for descriptions). Neither of the videos showed the verdict, allowing mock jurors to reach their own verdict.

Consistent with real trials in England and Wales, jurors were provided with blank lined notepads and pens for note taking. Previous studies in this PhD thesis and in the wider literature have found no differences in the quantity of trial information recalled between those who were and were not allowed to access notes when recollecting the trial information (e.g., ForsterLee et al., 1994). In addition, real jurors may not always have access to their notes during deliberations (e.g., Lloyd-Bostock, 2007). Therefore, the present study did not include the access to notes condition.

All mock jurors were also given a demographic/verdict questionnaire asking them their age, gender, and whether they considered the defendant to be guilty or not guilty (in the criminal trial) or legally culpable or not culpable (in the civil trial). Finally, a 10-page A4 lined booklet was provided for the free recall test.

There were two recognition tests, one for each of the trial videos. The recognition tasks were included to determine whether with experience jurors would become better at recognising correct trial information. The criminal trial task consisted of 24 true-false statements about the trial evidence. The civil trial task consisted of 20 true-false statements about the trial evidence. In each task, half of the statements were true. For counterbalancing purposes there were two versions of each task. True statements in one version were turned into false statements in the other. For instance: a true statement from the criminal trial stating: “Lisa Bias had threatened to kill herself prior to the night of her death” was changed to a false statement stating: “Lisa Bias

had never threatened to kill herself prior to the night of her death". Furthermore, a true statement from the civil trial stating "Davis was using a handheld mobile phone at the time of the incident" was changed to a false statement stating "Davis was using a hands-free mobile phone at the time of the incident" (see Appendix B for all statements). One point was awarded for each correct answer and converted into percentages of correct answers.

7.2.3 Procedure

Jurors attended two experimental sessions, one week apart. They arrived at a computer laboratory in pairs but were tested individually. Each juror was seated at an individual PC. During each session they watched one of the two trial videos. The order of the videos was counterbalanced (half of the jurors saw the criminal trial in session one and the civil trial in session two, whereas the other half of the jurors saw the civil trial in session one and the criminal trial in session two). Jurors were informed that they would be allowed to take notes during the trial and were provided with a notepad and pen. Immediately after each trial, jurors had their notes confiscated. They then completed the demographic questionnaire/verdict questionnaire. Next, they completed a free recall task with no time limit. Jurors were instructed to write down all trial information they could remember. Then, all jurors were given the recognition test with no time limit. Lastly, they were asked to complete the Triarchic Psychopathy Measure (Patrick, 2010). This was included in the study as a separate investigation exploring the effects of psychopathic traits on verdicts. The analysis of this data does not appear in this chapter, so as not to distract from the main research questions. All jurors were debriefed and the study ended.

7.2.4 Coding

The notes and free recall responses were scored for the quantity of correct and incorrect trial information noted down and recalled. As in the previous studies, there were very few instances of trial information being incorrectly noted down (M = 0.05, SD = 0.20) and recalled (M = 0.11, SD = 0.31). Therefore, the analysis focused on the the quantity of correct trial information noted down/recalled.

Further, notes and free recall responses were scored for the quantity of the critical trial evidence they included. This included a total score, as well as one score for the quantity of incriminating evidence noted down/recalled, and another score for the quantity of non-incriminating evidence jurors noted down/recalled. The coding process is outlined in Chapter 3, Section 3.5.

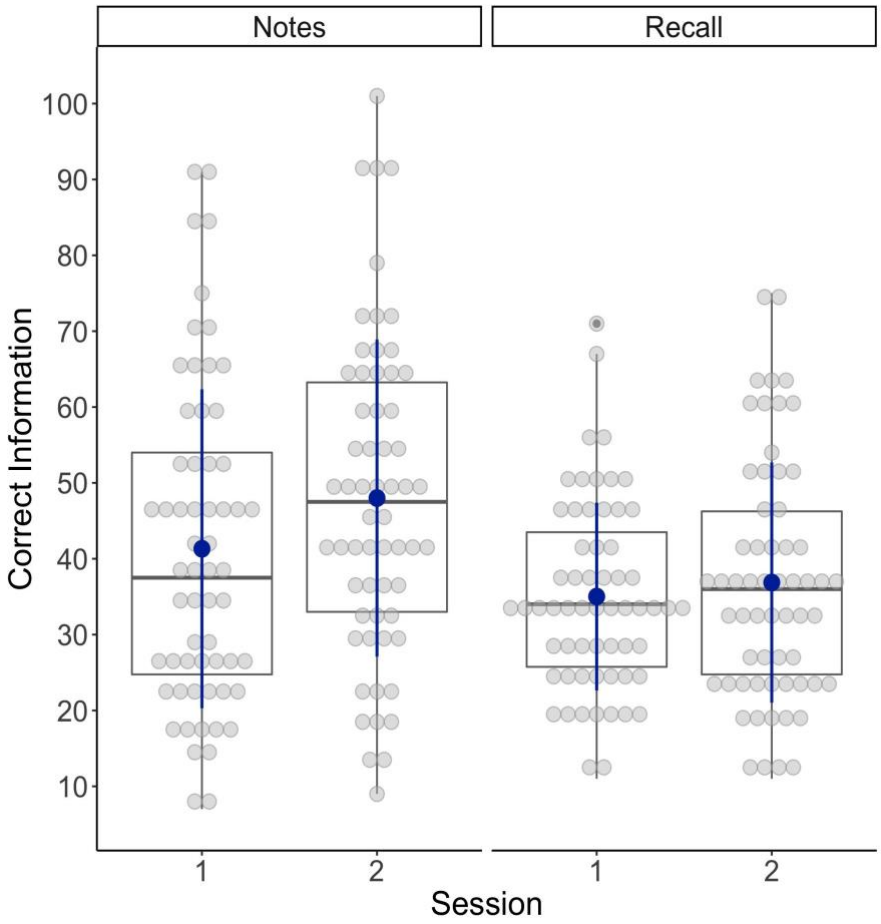
Three raters that were blind to the experimental aims scored one-third of notes and free recall responses. The inter-rater agreement was 93% for notes and 95% for free recall responses. All disagreements were resolved by the original rater and an independent reviewer who compared the scoring and determined the correct scoring.

7.3 Results

7.3.1 Correct trial information

A paired samples t-test was conducted to investigate whether there was a significant difference between the quantity of correct trial information noted down during session one and session two. Jurors noted down more correct trial information during session two (M = 48.00, SD = 20.90) than session one (M = 41.32, SD = 21.09), $t(59) = 2.40$, $p = .01$, $d = 0.31$ (see Figure 7.1). It was also examined whether there was a significant difference between the quantity of correct trial information recalled from session one and session two. The paired samples t-test revealed no significant differences between the quantity of correct information jurors recalled from session one (M = 35.02, SD = 12.37) when compared to session two (M = 36.87, SD = 15.83), $t(59) = 0.87$, $p = .195$, $d = 0.11$ (see Figure 7.1).

Figure 7.1. Box plots showing the individual scores (grey dots) and the means (blue dots) for the number of correct pieces of information noted down/recalled during session one and session two.



A further analysis was conducted using percentages of correct information noted down and recalled as the dependent variable in order to take into account the uneven numbers of total pieces of information included in each trial video (207 in the criminal trial and 417 in the civil trial). The percentage correct variable was computed by dividing the number of correct pieces of trial information by the total amount of information included in the trial video and converting it into percentages.

A paired samples t-test revealed that jurors noted down proportionally more correct trial information during session two (M = 16.43%, SD = 7.85) than session one (M = 13.00%, SD = 8.34), $t(59) = 2.82$, $p = .01$, $d = 0.36$. However, there was a non-significant difference between the percentage of correct information jurors recalled in session one (M = 12.43%, SD = 5.51) when compared to session two (M = 12.17%,

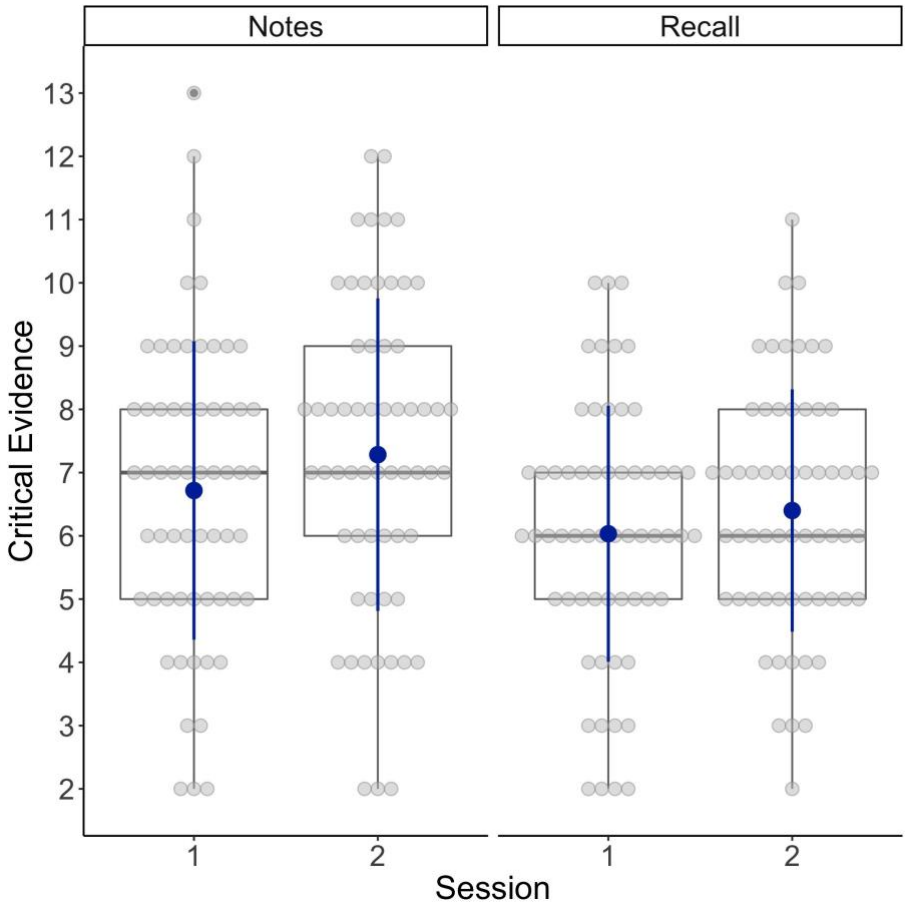
SD = 4.59), *t*(59) = 0.35, *p* = .729, *d* = 0.05. This analysis demonstrates that jurors did note down more during session two, however, they did not recall significantly more trial information during session two. This is in line with the findings from the main analysis examining the quantity of correct information.

A paired samples t-test also revealed that jurors noted down proportionally more correct trial information during the criminal trial (*M* = 18.11%, *SD* = 8.93) than the civil trial (*M* = 12.43%, *SD* = 5.13), *t*(59) = 6.32, *p* < .001, *d* = 0.82. They also recalled proportionally more correct trial information during the criminal trial (*M* = 14.16%, *SD* = 5.38) than the civil trial (*M* = 10.21%, *SD* = 3.32), *t*(59) = 8.01, *p* < .001, *d* = 1.03.

7.3.2 Critical trial evidence

Critical trial evidence is also important to examine as it is likely to affect jurors verdicts. A paired samples t-test was performed to assess whether there was a significant difference between the quantity of critical trial information noted down during session one and session two. The difference was statistically significant, *t*(59) = 1.99, *p* = .03, *d* = 0.26, with jurors noting down more critical trial evidence during session two (*M* = 7.28, *SD* = 2.47) than session one (*M* = 6.72, *SD* = 2.36) (see Figure 7.2). A paired samples t-test also showed no significant difference between the quantity of critical evidence recalled during session one (*M* = 6.03, *SD* = 2.03) and session two (*M* = 6.40, *SD* = 1.92), *t*(59) = 1.31, *p* = .10, *d* = 0.17 (see Figure 7.2).

Figure 7.2. Box plots showing the individual scores (grey dots) and the means (blue dots) for the number of critical pieces of evidence jurors noted down and recalled in session one and session two.



7.3.3 Recognition of trial information

It was also examined whether jurors were better at recognising true trial information (percentage of correct answers) in session two as opposed to session one. A paired samples t-test revealed no significant differences between session one (M = 81.20, SD = 7.82) and session two (M = 83.3, SD = 9.87), $t(59) = 1.27$, $p = .104$, d = 0.24.

7.3.4 Correlations between notes and recall

The association between the quantity of correct notes taken and correct information recalled during session one and session two were further explored. Presumably noting down more pieces of correct information would lead to better recall in both sessions. That is, the benefits of note taking on recall might be enhanced due to jurors' prior trial experience.

The cocor R package version 1.1-3 (Diedenhofen & Musch, 2015) was used to compare two correlations measured on dependent groups. Specifically, the Steiger's (1980) test equation was used to compute the asymptotic covariance of the estimates. Values greater than 1.96 were considered significant (two-tailed test).

The differences in the strength of two correlations were compared for: (a) the correlation between quantity of notes and recall during session one with (b) the correlation between quantity of notes and recall during session two. The test was not statistically significant, $z = -1.34$, $p = .18$. This indicates that there was no significant difference between the two correlation coefficients, suggesting that note taking did not become more strongly associated with recall with experience. In addition, Zou's (2007) test was performed to calculate the confidence intervals of the difference between the two correlation coefficients. The test was not statistically significant, 95% CI -0.319, 0.057. This further confirms that the difference in the magnitude of the correlations were not statistically significant, even when considering the range in the estimate due to error. This means that there was not a significant improvement with regards to the strength of the correlations between the quantity of correct notes taken and correct information recalled from session one to session two. The correlation coefficients used in this analysis are reported in Table 7.1.

Table 7.1

Descriptive statistics and zero order correlations (Pearson's r) between the quantity of correct trial information noted down and recalled during session one and session two.

Variable	Mean (±SD)	1	2	3
1. Correct Notes Session 1	41.32(±21.02)	-		
2. Correct Recall Session 1	35.02(±12.37)	.630**	-	
3. Correct Notes Session 2	48.00(±20.90)	.472**	.454**	-
4. Correct Recall Session 2	36.87(±15.83)	.039	.333*	.753**

* $p < .01$, ** $p < .001$

Furthermore, the association between the quantity of critical evidence noted down and recalled during session one and session two was also examined (see Table 7.2). The Steiger's test showed that there was no significant difference between the two correlation coefficients, z = 0.60, $p = .55$. In addition, the Zou's (2007) test was also not significant, 95% CI -0.186, 0.353. Again, this means that there was not a significant improvement over the course of the two trials with regards to the association between noting down critical trial evidence and later recall.

Table 7.2

Descriptive statistics and zero order correlations (Pearson's r) between the quantity of critical trial evidence noted down and recalled during session one and session two

Variable	Mean (±SD)	1	2	3
1. Critical Notes Session 1	6.72(±2.36)	-		
2. Critical Recall Session 1	6.03(±2.02)	474**	-	
3. Critical Notes Session 2	7.28(±2.47)	.584**	.422**	-
4. Critical Recall Session 2	6.40(±1.92)	.161	.394*	.391*

* $p < .01$, ** $p < .001$

7.3.5 Verdict and order effects

Two logistic regressions were conducted to investigate whether the order of trials was related to jurors' verdicts during each of the trials. The order in which the jurors were presented the trial videos did not predict their verdicts during the criminal trial, ($x^2(1) = 0.28$, Cox & Snell $R^2 = .005$, Nagelkerke $R^2 = .006$, $p = .60$). Further, the trial order did not predict jurors' verdict on the civil trial, ($x^2(1) = 2.45$, Cox & Snell $R^2 = .04$, Nagelkerke $R^2 = .05$, $p = .12$).

7.3.6 Verdict and critical trial evidence

Two separate logistic regression analyses were performed to investigate whether the quantity of incriminating and non-incriminating evidence statistically predicted the likelihood of participants reaching a guilty/legally culpable verdict. Table 7.3 shows the correlations between the independent variables in the logistic regressions. In the criminal trial 31 jurors reached a guilty verdict and 29 reached a not guilty verdict. In the civil trial 31 jurors reached a culpable verdict and 29 reached a not culpable verdict.

Table 7.3

Descriptive statistics and zero order correlations (Pearson's r) between the main variables.

Variable	Mean (±SD)	1	2	3	4	5
1. Verdict Criminal	-	-				
2. Verdict Civil	-	.132	-			
3. Criminal incriminating	3.13(±1.31)	.382**	.177	-		
4. Criminal non-incriminating	2.83(±1.55)	-.494**	.004	.211	-	
5. Civil incriminating	2.60(±1.11)	-.170	.316*	.271*	.364**	-
6. Civil non-incriminating	3.93(±1.23)	-.053	.217	.163	.206	-.007

* $p < .05$, ** $p < .01$

The regression for the criminal trial assessed whether the quantity of incriminating evidence and the quantity of non-incriminating evidence jurors recalled predicted their verdict (0 = not guilty, 1 = guilty). The overall model significantly predicted the likelihood of jurors reaching a guilty verdict, correctly identifying 83.3% of cases ($x^2(2) = 39.70$, Cox & Snell $R^2 = .48$, Nagelkerke $R^2 = .65$, $p < .001$). The quantity of incriminating evidence recalled statistically and positively predicted the likelihood of guilty verdicts being reached by jurors, B = 1.68 (SE = .48), Wald = 12.01, $p < .001$; OR = 5.35, 95% CI = 2.07, 13.82, such that for every additional piece of incriminating evidence recalled, jurors were 5.35 times more likely to reach a guilty verdict. Further, the quantity of non-incriminating evidence recalled negatively predicted the likelihood of guilty verdicts, B = -1.50 (SE = .40), Wald = 14.35, $p <.001$; OR = 0.22, 95% CI = 0.10, 0.49, such that for every piece of non-incriminating evidence recalled, jurors were 4.55 times less likely to reach a guilty verdict.

The second logistic regression assessed whether the quantity of incriminating and non-incriminating evidence jurors recalled predicted their verdicts (0 = not legally culpable, 1 = legally culpable) on the civil trial. The overall model significantly predicted the likelihood of jurors finding the accused culpable, correctly identifying 71.7% of cases ($x^2(2) = 8.19$, Cox & Snell $R^2 = .13$, Nagelkerke $R^2 = .17$, $p =.02$). The quantity of incriminating evidence recalled statistically predicted jurors finding the accused culpable, B = .68 (SE = .29), Wald =5.45, $p =.02$; OR = 1.98, 95% CI = 1.12, 3.51, such that for every additional piece of incriminating evidence recalled, jurors were 1.98 times more likely to reach a legally culpable verdict. However, the quantity of non-incriminating evidence recalled did not significantly predict the likelihood of jurors reaching a culpable verdict, B = -.32 (SE = .24), Wald = 1.79, $p =.18$; OR = 0.73, 95% CI = 0.46, 1.16.

7.4 Discussion

The present study examined the effect that serving on multiple trials has on juror note taking and recall of trial evidence. It also assessed whether the quantity of critical evidence jurors recall predicts their verdicts. The study found that (1) jurors wrote down more correct trial information and critical trial evidence in session two when compared to session one; (2) there was no significant difference in the quantity of correct trial information and critical trial evidence jurors recalled across the two sessions; (3) in both sessions there was a positive association between the volume of correct trial information/critical evidence noted down and volume of correct trial information/critical evidence recalled. In addition, in both trials the jurors who recalled the most critical incriminating evidence were more likely to find the defendant guilty/culpable. However, in the criminal trial, only jurors who recalled the most critical non-incriminating evidence were more likely to find the defendant not guilty.

The present study is the first to show that jurors' note taking improves with experience. This is in line with the findings from the educational psychology literature which suggest that students' note taking skills improve with experience (Nye, 1978; Williams & Eggert, 2002). It was found that jurors noted down not only more correct trial information but, more importantly, more critical trial evidence. Therefore, the present findings demonstrate that having limited prior experience of note taking (i.e. one trial) does have a beneficial effect on jurors' note taking during subsequent trials. Previous research demonstrates that real jurors find note taking challenging as they do not know what and how much to write down during a trial (Matthews et al., 2004). Thus, the finding is of importance as it shows that prior experience facilities note taking during trials.

The current study did not investigate the reasons why prior experience is beneficial. However, findings from the educational psychology literature demonstrate that older students self-reported more confidence in their note taking abilities (Carrier et al., 1988) and older students are better note takers (Nye, 1978). Perhaps due to their prior experience and newly acquired knowledge of trial proceedings, jurors become

more confident. This may in turn help them note down more information during a trial, including more critical trial evidence. Therefore, jurors with prior experience may be more confident regarding what and how much to write down during a trial when compared to those with no prior experience. Although the current study shows that prior experience improves note taking, the effect sizes are relatively small which indicates that the improvements are modest. This suggests that a lack of prior experience may not have a detrimental effect on juror note taking in real trials. However, it could also be argued that jurors need more extensive prior experience in order to see greater note taking gains. Thus, future studies should investigate the impact of extensive experience on note taking and considered the reasons why prior experience is helpful.

Although note taking was found to significantly improve note taking, there were no significant differences in the quantity of correct trial information and critical trial evidence jurors recalled across the two sessions. As the quantity of notes taken during each session was strongly associated with the quantity of recalled information, recall was also expected to improve in session two when compared to session one. That is, jurors noting down more information possibly leads to a stronger association between notes and recall over time. However, the strength of the correlations between notes and recall for each session was not found to be significantly different. Therefore, the benefits of prior experience appear to be limited such that jurors note down a little more trial information after they gain experience, but they do not remember more trial information as a result of this.

There are a number of potential explanations for the non-significant difference in recall, before and after gaining note taking experience. The most straightforward explanation for not observing an improvement may be due to a small increase in the number of additional notes that jurors took in session two when compared to session one (as indicated by the small effect sizes). Perhaps jurors need to note down a larger quantity of notes in order to have a significant facilitative effect on the quantity of trial information they then recall. Alternatively, it may be that the quantity of information jurors recalled was constrained by their memory capacity. The evidence suggests that that the ability to retrieve information from long term memory may be constrained by

working memory capacity (Unsworth & Engle, 2007). Perhaps jurors were able to take more notes during the second session due to prior experience, however, their working memory capacity allowed them to recall approximately the same quantity of information as they did in session one.

Furthermore, there are potential practical benefits to jurors noting down more trial information and critical evidence. As real jurors may be permitted to access their notes when deliberating and reaching verdicts, it is important that their notes contain a large quantity of trial information, particularly the critical evidence. The present study shows that prior experience of note taking during a single trial moderately increases the quantity of correct and critical evidence jurors note down. Jurors do not appear to benefit from such small note taking enhancements when their memory is tested at an individual level. However, having more notes available during deliberations may aid real jurors' collaborative memory and result in more informed verdicts. This should be explored by future research.

In addition, the present study found that verdicts for both trials were associated with the quantity of critical incriminating and non-incriminating trial evidence jurors recalled. Such that, jurors who recalled more incriminating evidence were more likely to find the defendant guilty/culpable for both trials. The present study replicated the findings from the earlier studies (Chapters 4, 5 and 6). More importantly, the previous findings were extended by demonstrating that similar effects are found in a different type of trial. However, only in the criminal trial jurors who recalled more non-incriminating evidence were less likely to find the defendant guilty. Surprisingly, this association was not significant in the civil trial. This contradicts the findings from the present study and earlier studies regarding the criminal trial. It may be that the non-incriminating evidence was weaker than the incriminating evidence in the civil trial and thus, jurors remembered more incriminating evidence. The evidence presented in civil trials is normally not as strong as the evidence in criminal trials. This is due to the fact that in criminal trials defendants' guilt must be proven beyond reasonable doubt whereas in civil trials legally culpable verdicts are reached based on the balance of probabilities. Given that each trial is unique in the type and quantity of evidence

presented, different trials may produce slightly different effects with regards to verdicts. Future studies should investigate this with other criminal and civil trials.

Taken together, the present study is the first to to examine the impact that serving on multiple trials has on juror note taking and recall. It was found that note taking improved with trial experience. However, there was no additional enhancement regarding recall. Even a finite amount of prior experience (i.e. one trial) is beneficial to juror note taking. However, it may be argued that the benefits of prior experience were limited as jurors noted down only a small additional amount of information during the second trial. More importantly, prior experience had no impact on the quantity of trial evidence they were able to recall. Therefore, inexperienced jurors in real trials are likely to perform as well as experienced jurors. In addition, in both trials, the quantity of critical incriminating evidence jurors recalled was associated with them being more likely to reach a guilty/culpable verdict. This replicates the findings from the previous studies and confirms the role that recalling critical trial evidence plays in verdicts.

Chapter 8: General discussion

Although a number of studies have consistently demonstrated that allowing jurors to take notes during trials improves their recall of trial information (ForsterLee & Horowitz, 1997b; Rosenhan et al., 1994; Thorley et al., 2016), there are gaps in literature with regards to understanding the kind of factors that may influence how much jurors are able to note down during trials. In light of this, the principal aim of this thesis was to examine the impact of a number of individual differences on jurors' note taking during trials and recall of trial evidence. Both the volume of overall correct trial information and the volume of critical trial evidence jurors noted down and recalled were examined. The following individual differences were assessed: handwriting speed, working memory, short-term memory, information processing ability, sustained and divided attention, and prior trial experience of note taking. Furthermore, another key aim of the present research was to investigate whether the type of evidence (incriminating or non-incriminating) jurors predominantly recollect can statistically predict their verdicts.

This final chapter discusses and synthesises the key findings from the four experimental chapters presented in this PhD thesis. It discusses how the findings contribute to the wider literature and highlights the theoretical as well as practical value of the present research. It also identifies limitations and provides a number of directions for future research. Lastly, a brief conclusion is presented.

8.1 Findings and implications

First, Chapter 4 assessed individual differences in jurors' handwriting speed. It was found that jurors with faster handwriting speeds recall a greater amount of correct trial information, and this is due to being able to note down a greater amount of correct trial information during the trial. More importantly, those with faster handwriting speeds recalled more critical trial evidence, through noting down more critical evidence during the trial. This is in line with the findings from educational psychology (Peverly et al., 2014) and extend those findings to a new research domain. This supports the argument that those with faster handwriting speed are physically able to take more notes during presentations/trials which subsequently helps them remember more information. Alternatively, the findings may support Peverly's (2006) theory that

those with slower handwriting speed need to hold the information in memory for longer which could result in more cognitive load being imposed upon their working memory as they try to store presented information while new information is still forthcoming (see also Piolat et al., 2005). On the other hand, those with faster handwriting speed may have more working memory resources available which they can utilise to take better notes.

Furthermore, Chapter 5 investigated individual differences in jurors' memory storage capacity and information processing ability. The study found that working memory storage capacity did not predict the amount of notes they took or how much of the trial evidence they could correctly recall. Although note taking is believed to be dependent upon the cognitive processes (i.e. manipulating and temporarily storing information) which take place in working memory (Piolat et al., 2005), the present finding does not support this assumption. Previous similar studies also found no significant associations between working memory and lecture note taking (Peverly et al., 2014, 2013). Further, no significant associations were found between jurors' information processing ability and the amount of critical evidence/correct evidence noted down and recalled. This is inconsistent with previous studies (e.g., Kiewra & Benton, 1988). Lastly, jurors with higher levels of short-term memory storage capacity recalled a greater amount of critical evidence, and this was because they noted down a greater amount of critical evidence. This also supports the idea that the cognitive process of temporarily storing information in memory is important during note taking (Piolat et al., 2005). However, short-term memory storage capacity did not predict the volume of overall trial information noted down/recalled. This is the first study to demonstrate that individual differences in short-term memory storage capacity play a role in juror note taking and recall of critical trial evidence. Such findings could also be generalised to other domains, for instance lecture note taking.

Next, Chapter 6 examined the role of individual differences in attention. Jurors with higher sustained attention capacity were found to note down a greater amount of trial information as well as critical evidence. In addition, jurors with higher sustained attention capacity recalled a greater amount of trial information and critical evidence, which was due to them noting down more trial information and critical evidence during

the trial. This is in line with the findings from the educational psychology literature (Peverly et al., 2014). In addition, the findings support the overload theory (Grier et al., 2003; Parasuraman & Davies, 1977; Parasuraman, Warm, & Dember, 1987). The theory suggests that individuals' attentional resources become exhausted when attempting to maintain focus on the same event for extended periods of time and the ability to maintain focus vary among people. However, individual differences in jurors' divided attention capacity were not found to be associated with note taking and subsequent recall. The study extends the findings regarding sustained attention from the educational psychology literature to a new research domain.

Lastly, Chapter 7 explored individual differences in prior experience. It was found that jurors noted down a greater amount of trial information and critical trial evidence during the second trial when compared to the first trial. This suggests that note taking improves with experience and over time. This is in line with the educational psychology literature (Nye, 1978; Williams & Eggert, 2002). This supports the assumption that improvements in note taking are due to prior experience (Williams & Eggert, 2002) as jurors did not receive any instructions on how to structure/organise notes and what to note down. It could be argued that prior experience makes jurors more confident with regards to what and how much to write down. Thus, they note down more information during a trial, including more critical trial evidence. However, surprisingly there was a non-significant difference in the amount of correct trial information and critical trial evidence jurors recalled across the two sessions. This is the first study to demonstrate that jurors' prior trial experience enhances how much trial evidence they note down. Therefore, it extends the findings from lecture note taking to a new setting i.e. note taking during trials.

Furthermore, studies 1 and 3 found no difference in the amount of trial information recalled between jurors who could access their notes during the free recall test and those who could not access their notes. This is consistent with previous studies (e.g., ForsterLee et al. 1994; Thorley et al. 2016). The present and previous findings support the encoding effect rather than the external storage effect. This suggests that jurors benefit from the act of note taking during encoding. Note taking enhances encoding as it encourages generative processing of the presented information (Bretzing

& Kulhavy, 1979; Di Vesta & Gray, 1972; Peper & Mayer, 1978, 1986) by creating connections between diverse parts of the incoming information. Thus, such information is stored in memory in a meaningful and organised way (Wittrock, 1992; Wittrock, Marks, & Doctorow, 1975). Generative processing results in a more elaborate and deeper encoding of the presented information (Craik & Lockhart, 1972; Craik & Tulving, 1975; Kiewra, 1985; Wittrock & Carter, 1975). Additionally, the information which is stored in an organised way in memory is subsequently easier to retrieve as one piece of information cues the recall of other related pieces of information (Mayer, 1996; Tulving, 1983). Although the present studies did not investigate what occurs during encoding, presumably the way in which jurors take notes affects how much they are able to encode. Jurors may adopt a number of techniques which could aid their memory, such as drawing arrows to link related pieces of information or using headings to order incoming information. In order to gain an understanding of the processes that take place during encoding future researchers need to examine the structure of jurors' notes.

The current findings have important applied value. Although note taking has been consistently found to improve recall of trial information, some judicial systems deny jurors the opportunity to take notes during trials. The present studies showed that note taking increases recall of correct trial information and critical evidence. It is reasonable to presume that jurors who remember more trial information will have a greater chance of reaching a just verdict. Based on the present findings, all jurors should be permitted to take notes during trials.

Furthermore, the present studies demonstrate that jurors with faster handwriting speeds, higher short-term memory capacity, and higher sustained attention take more notes during trials and, as a result, they recall greater amounts of correct trial information and critical evidence. As such, a number of applied suggestions are presented. For instance, jurors' handwriting speed as a feature of note taking is likely to affect jurors' recall. Thus, it may be that providing instructions for speeded writing would help jurors note down more trial information and subsequently reach more informed verdicts. For instance, by using abbreviations and missing out certain words (e.g. articles). In addition, sustained attention is also likely to affect how

much critical evidence jurors recall. Currently, jurors in the US are often required to attend court sessions of no less than 80 minutes after which they are allowed a 15-minute break. Thus, perhaps jurors with lower sustained attention capacity would benefit from taking more frequent breaks. This would help them stay focused on the trial evidence and prevent them from missing critical evidence which could then impact upon their decision making.

Additionally, the current findings have an important theoretical value. Except for a small number of studies from the educational psychology literature, little was known about the role that individual differences play in note taking. This thesis demonstrates that the impact of handwriting speed and sustained attention on note taking and recall generalise to another domain. In addition, the present research is the first to identify that short-term memory capacity is also an important factor that is associated with note taking and recall.

Another aim of the present research was to investigate whether the type of information jurors predominantly recollect from trials could statistically predict their verdicts. Chapter 4 demonstrated that verdicts from the criminal trial were predicted by the type of critical evidence jurors predominantly recollected. As such, jurors who recalled more incriminating evidence from the criminal trial were more likely to find the defendant guilty, and those who recalled more non-incriminating evidence were less likely to find the defendant guilty. Chapters 5, 6 and 7 have replicated these findings. In addition, Chapter 7 also attempted to extend these findings to a civil trial. It was found that jurors who recalled more incriminating evidence from the civil trial were more likely to find the defendant legally culpable. However, there was no significant association between the volume of non-incriminating evidence recalled and not legally culpable verdicts. This could be due to the non-incriminating evidence in this particular trial being weaker and thus jurors were more likely to remember the incriminating evidence. The present research studies are the first to demonstrate that variations in the kind of critical evidence jurors predominantly recollect from trials is associated with their verdicts. In order to make informed and just decisions, jurors must remember as much of the critical evidence as possible.

8.2 Limitations

As it is impossible to study real jurors, the current research utilised mock juror laboratory experiments in order to explore the set research questions. However, there are a number of limitations that may challenge the findings from such trial simulation studies. Perhaps the most concerning is the problem of validity, in other words are the findings ecological valid such that it is possible to generalise findings from mock jurors to real jurors. Although in the present research participants from the general population were recruited, the majority of participants were undergraduate students who were eligible for jury service.

Bornstein (1999) compared mock juror studies that recruited both students or non-students to determine any differences in verdicts. In such experiments, both students and non-students were asked to reach a verdict and any differences were then assessed between the two groups. Only five out of 26 such studies have reported significant differences in verdicts. For instance, Finkel and colleagues have consistently found no differences between the two groups (Finkel & Duff, 1991; Finkel, Hughes, Smith, & Hurabiell, 1994). Furthermore, individual differences in pretrial bias predicted verdicts similarly in student and non-student samples (Kassin & Wrightsman, 1979). In addition, Freedman, Krismer, MacDonald and Cunningham (1994) reported no differences in verdicts between the two samples when seriousness and penalty severity of crime was varied. Taken together, the evidence suggests that the differences in verdicts between student and non-student samples in jury research are minimal. Therefore, the samples used in the present research should not restrict the generalisability of the findings. Bornstein's (1999) review concluded that using students as mock jurors does not pose a threat to the generalisability of findings regarding verdicts to real trials and real jurors.

The findings presented in this thesis can be positioned somewhere between the student studies from the educational psychology literature and real juries. There are a number of similarities between students, mock jurors and real jurors. For instance, all are required to listen to novel and often complex information whilst making notes in order to remember as much as possible to recall such information at a later date. However, there are also a number of differences between the three groups that should

be considered when discussing the present findings. First, the level of stress and anxiety may play a role. Typically, students do not experience stress during lectures when compared to real jurors who are likely to be affected by the courtroom environment, evidence and case details as well as the responsibility of reaching a just verdict. Although in the present study jurors were asked to imagine they were real jurors, watching a trial video in a laboratory is unlikely to cause any level of stress. Furthermore, the purpose and consequence of actions are not comparable between the three groups. Students take notes so that they can remember and later revise to pass their exams whereas real jurors take notes so that they can review them during deliberations when reaching verdicts. However, mock jurors are aware that their decision does not have a real impact, and thus may not be motivated enough to take as much notes as they would in a more realistic situation. Taken together, factors such as stress, anxiety and motivation could all influence the present findings and should be considered by future research.

Furthermore, another methodological approach that may affect the validity of the mock juror findings is the way in which the trial is presented. Different studies have used different methods to present the trial, namely: a transcript summary, audio record, videos of mock trials, real trials, and live trials (see a review by Bornstein, 1999). In an attempt to increase the ecological validity, trial videos were used in all studies. It has been argued that using trial videos improves the ecological validity of laboratory-based juror studies (Studebaker et al., 2002). The present studies focus on juror note taking during trial, therefore it is more practical to have jurors watch a video whilst taking notes. However, the trial videos lasted only 30/35 minutes. Real trials can last days or weeks. Note taking over longer periods of time may impose more cognitive demands on jurors' attention. For instance, in longer trials jurors with higher levels of sustained attention capacity may eventually lose focus. Additionally, longer trials may impose more physical demands on jurors' handwriting speed. As such, jurors with faster handwriting speed may slow down after extended periods of time due to tiredness. Note taking behaviours over extended periods of time have not yet been investigated. Nevertheless, the present studies did find significant indirect effects of individual differences and these may be even more evident in real and longer trials. Future studies should explore note taking behaviours over longer periods of time.

In addition, there are other methodological approaches that may have an effect on the findings. In this thesis, mock jurors did not deliberate but rather reached verdicts and recollected trial information individually. The main objective of the present research was to assess the impact that individual differences have on an individual juror's note taking during trials and their subsequent recollection of trial information. It was, therefore, logical to examine each juror's memory in isolation.

Although experimental studies may not precisely capture the nature of real trials, they have a number of advantages when studying jury behaviour (Brewer & Kipling, 2005). First, they allow replication, such that the same trial video can be shown to a larger number of participants. This would not be possible if real jurors were to be studied. Replication is important as it allows to confirm and dispute previous findings. Another advantage of jury experiments is that there is more control over confounding variables. Therefore, the current PhD research aimed to mimic the setting of a real trial in a laboratory setting in order to meet the research aims and objectives.

8.3 Future directions

There are a number of future directions that arise from the current findings. First, the present studies have identified three factors (i.e., handwriting speed, short-term memory, sustained attention) that are associated with juror note taking and recall. Additionally, jurors' prior trial experience improved note taking. Further research is needed to replicate and confirm such findings.

Furthermore, contrary to theoretical assumptions the present study has not found a significant association between working memory capacity storage and note taking and recall of trial evidence. It may be that jurors' note taking styles and/or strategies influence the extent to which they engage their working memory storage. It may be that jurors were simply writing down everything presented during the trial and they did not try to organise and structure their notes. Thus, future research should investigate the role of working memory when jurors are asked to organise their notes. Alternatively, the non-significant finding may be due to the test used in the present study. As such, it is suggested that a battery of working memory tasks may clarify the association between working memory and note taking. Lastly, the delay between

encoding the trial information and recollecting it may mean that working memory and short-term memory was not accurately tested for jurors who took longer than others to reach verdict. The impact of such delay should also be investigated by future research.

In addition, divided attention was not found to be a significant predictor of jurors' notes and recall. This finding is surprising and it may be a result of the mostly student sample used in the study who had prior experience of note taking during lectures. Perhaps their prior experience meant the cognitive demands of note taking were less profound than would be found in a population with little or no experience. Future research needs to investigate the role of divided attention in non-student samples to clarify this.

Further, having prior trial experience did not improve the amount of trial information and critical trial evidence jurors recalled. It may be that jurors need more extensive prior experience to see greater note taking gains which would then lead to them being able to recall more evidence. Presumably jurors with more experience might be more confident as they are familiar with the court environment and trial proceedings. Therefore, they may find it easier to know what evidence to note down and how much to write down during a trial. Consequently, they may be able to encode and recall more trial information. Alternatively, it may be that even though jurors' memory did not improve when tested in isolation, prior experience may benefit jurors' collaborative memory i.e. when they recollect trial evidence during deliberations. This should be considered by future research.

Additionally, this thesis examined a finite number of individual difference factors. Thus, future research should examine whether other individual difference factors may influence juror note taking and recall. For instance, language comprehension and pretrial publicity may also impact how much jurors note down and subsequently recall. In addition, since the present studies tested the various individual differences in isolation, researchers are encouraged to study all of those factors together in a single study. This would provide an insight into any potential covariance among the individual factors. As such it would allow an examination of the strongest predictors of note taking and recall. However, studying all of the factors in a single study could be challenging due to the length of the tasks. Therefore, researchers should

consider running two experimental sessions: one which assesses the individual factors are assessed and another one which examines note taking and recall of trial information.

Furthermore, all of the present studies assessed the effects of note taking on individual jurors' recall of trial information and evidence. However, real trials involve deliberations which require jurors to recollect evidence in a collaborative manner. Previous studies indicated that note taking during trials enhances collaborative memory of jurors (e.g., Horowitz & Bordens, 2002). Future researchers should investigate the impact of individual differences on jurors' collaborative memory. It could be that during deliberations jurors' recall is more likely to be influenced by those who take more notes during trials, i.e. those who have a faster handwriting speed and those who have better sustained attention. In addition, it should be examined whether deliberations are affected by the fact that some jurors take notes during trials and others do not. Furthermore, it should be assessed whether more information is discussed during deliberations if jurors are able to refer to their notes. Overall, future research should consider the role that notes may play in deliberations and the subsequent effects on jurors' recall of trial evidence and verdicts.

Lastly, the present studies were the first to demonstrate that the type of critical evidence jurors predominantly recalled predicted their verdicts. Future research should attempt to replicate the present findings with different types of trial videos. For instance, there was no significant association between the amount of incriminating evidence jurors recalled from the civil trial and their verdicts.

8.4 Conclusion

The present studies demonstrated that jurors with faster handwriting speed, higher short-term memory capacity, and higher sustained attention recalled greater amounts of correct trial information and critical evidence, and this effect was mediated by the amount of trial information and critical evidence they noted down during the trial. In addition, juror note taking improved over time, suggesting that even a finite amount of prior experience is beneficial to juror note taking. However, working memory storage capacity, information processing ability, and divided attention were

not found to be significantly associated with note taking and recall. Of importance, all studies found that the type of evidence jurors predominantly recalled predicted their verdicts. The current findings have an important theoretical value, such that they identify individual differences that predict the positive association between juror note taking and recall. This is particularly important given that jurors who recalled more incriminating evidence were more likely to reach a guilty or a culpable verdict.

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Appendix

Appendix A: Critical Trial Evidence

Critical Evidence in the Criminal Trial Video

Criminal Trial Video: Critical Evidence	**Verdict**
Lisa's has previously threatened to kill herself (and also threatened Dan in same incident)	Not guilty
No fingerprints were taken from the gun to see if Dan shot it.	Not guilty
The coroner rinsed Lisa's hair prior to the autopsy, which could have removed gunshot powder that would have helped demonstrate she killed herself.	Not guilty
No gunshot residue test on Dan's hands the night of the death to see if he fired the gun or not	Not guilty
Dan was emotional during his 911 call, suggesting he was truly sad his wife killed herself.	Not guilty
Lisa had mood swings/changes, including becoming clingy in the days leading up to her death (suggesting something was wrong)	Not guilty
Gunpowder was found in wound tract suggesting Lisa was shot from 6-8 inches away, consistent with Dan's account that he pulled the gun away and she shot herself.	Not guilty
The defence argued that if Dan had grabbed the gun, the bullet could have entered Lisa's head at a vertical angle (but coroner did not agree with this)	Not guilty
Victim was right handed but shot on left hand side of head	Guilty
Distance of shot too close for self-infliction due to arm length and gun length	Guilty
Lack of gunpowder residue in hair/on clothes implies shot from distance so cannot be suicide	Guilty
Dan changed his account of death to police across interviews	Guilty
Prosecution argument that bullet entered Lise's head at a vertical angle, which is inconsistent with Dan's account of death (if his account is correct, it should be a horizontal entry wound).	Guilty
The weapon was found under the front of Lisa's body but should have been behind if Dan's account is correct/she shot herself.	Guilty
Prosecution saying arguments between Dan and his wife led to him wanting to kill her.	Guilty
Prosecution saying Lisa wanted a divorce so Dan killed her	Guilty

Critical Evidence in the Civil Trial Video

Civil Trial Video: Critical Evidence	**Verdict**
There was little damage to Mrs Davies' car, suggesting the collision was less serious than Mrs Payne claims.	Not guilty
Dr. Femur confirms Patty Payne could have a pre-existing health issues due to work	Not guilty
John Smith's is called as a prosecution witness (e.g., to offer evidence Mrs Davies is not guilty) but is discredited due to tiredness/poor eyesight, so cannot confirm Mrs Davies is guilty.	Not guilty
Patty Payne did not seek medical help for 5 days, suggesting she was not seriously injured	Not guilty
Emergency services not contacted at crash scene, suggesting injury not serious / Patty Payne went to work after crash, suggesting it was not serious	Not guilty
John Smith believes the light was on green, contradicting Patty Payne's claim it was red	Not guilty
Mrs Davies admits talking on phone/ was distracted and causes the car crash	Guilty
Mrs Payne's medical appears to be new (as it has not been treated before) suggesting it was caused during the crash	Guilty
Damage to Mrs Payne's car (as seen in photograph and through costs) suggests a serious car crash, contradicting Mrs Davies' claim it was not serious (e.g., bumper hanging off)	Guilty
Dr Femur believes Mrs Payne's injury likely came from the car crash	Guilty
Mrs Davies was late for work, so likely speeding and caused the crash.	Guilty
Mrs Davies admitted fault for the crash/offered to pay damages and this suggests she was at fault	Guilty

Appendix B: Recognition Tasks

Criminal Trial: New Jersey vs Bias (Version 1)

Below are some statements relating to the trial video. Please indicate whether each statement is true or false.

Statement	Please Circle
According to the medical reports of Georgina Miller, Lisa Bias claimed she and Dan Bias had bad arguments about twice a year.	True / False
The coroner, Dr. Mihalakis, stated the muzzle of the weapon was of a distance within the range of self-infliction from Lisa Bias' head.	True / False
Dan Bias held a gun up to Lisa Bias approximately two months prior to the night of her death.	True / False
Dan Bias was watching TV when he started arguing with his wife on the night of her death.	True / False
The gun used in the shooting was a 357 Magnum.	True / False
According to her father, Chester Gasrowski, Lisa Bias was right handed.	True / False
In the police interview videotape, Dan Bias claims Lisa Bias' body hit the end of the bed when the gun went off and her body fell down.	True / False
Dan Bias first admitted that he tried to pull the gun away from his wife to Detective John Flynn.	True / False
Chief Medical Examiner, Dr. Roh, based his opinion of the muzzle-to-target distance on the fact there was no gun powder around the entrance wound and in the bullet tract.	True / False
According to the police videotape, Dan Bias said he and his wife had argued about money on the night of her death.	True / False
According to Police Officer Thomas Walsh, Dan Bias claimed he followed his wife upstairs approximately two minutes after she went upstairs.	True / False

According to the coroner, Dr. Mihalakis, the bullet entrance wound on Lisa Bias' head was upwards (i.e., vertical).	True / False
In the police interview videotape, Dan Bias claims Lisa Bias was holding the gun to her head in her left hand	True / False
In his statement to the prosecutor, Bob Russell, coroner Dr. Mihalakis stated he did not wash the hair he clipped from Lisa Bias' head.	True / False
Lisa Bias had threatened to kill herself prior to the night of her death.	True / False
Dr. Roh's estimate of the muzzle-to-target distance was 8-10 inches.	True / False
Dan Bias pointed a gun at Lisa Bias on the evening of her death.	True / False
Lisa Bias' arm reach from the auxilla to the tip of the index finger was 23.5 inches.	True / False

Please turn over for more statement

Dan Bias' fingerprints were found on the gun after tests had been conducted.	True / False
The coroner, Dr. Mihalakis, claimed he found no gunpowder deposits on Lisa Bias' scalp surface.	True / False
According to Police Officer Thomas Walsh, Dan Bias claimed Lisa Bias was standing in front of a wardrobe when the gun went off.	True / False
The distance from Lisa Bias' skin scalp surface to the tip of her index finger was 36 ½ inches.	True / False
In the photograph of Lisa Bias' body presented by Detective John Flynn, the gun is under her right arm.	True / False
The prosecutor, Bob Russell, claimed that Dan Bias pulled the gun from the dresser right before he shot her.	True / False

Criminal Trial: New Jersey vs Bias (Version 2)

Below are some statements relating to the trial video. Please indicate whether each statement is true or false.

Statement	Please Circle
The distance from Lisa Bias' skin scalp surface to the tip of her index finger was 30 inches.	True / False
The coroner, Dr. Mihalakis, stated the muzzle of the weapon was of a distance beyond the range of self-infliction from Lisa Bias' head.	True / False
Dan Bias was playing a video game when he started arguing with his wife on the night of her death.	True / False
In his statement to the prosecutor, Bob Russell, coroner Dr. Mihalakis stated he did wash the hair he clipped from Lisa Bias' head.	True / False
According to Police Officer Thomas Walsh, Dan Bias claimed he followed his wife upstairs approximately five minutes after she went upstairs.	True / False
Lisa Bias held a gun up to Dan Bias approximately two months prior to the night of her death.	True / False
The coroner, Dr. Mihalakis, claimed he found gunpowder deposits on Lisa Bias' scalp surface.	True / False
Chief Medical Examiner, Dr. Roh, based his opinion of the muzzle-to-target distance on the fact there was no gun powder around the entrance wound, but there was gunpowder in the bullet tract.	True / False
According to the police videotape, Dan Bias said he and his wife had argued about a piece of jewellery on the night of her death.	True / False
Lisa Bias' arm reach from the auxilla to the tip of the index finger was 30 inches.	True / False
According to the medical reports of Georgina Miller, Lisa Bias claimed she and Dan Bias had bad arguments about twice a week.	True / False

In the police interview videotape, Dan Bias claims Lisa Bias' body hit the end of the dresser when the gun went off and her body fell down.	True / False
It is unknown whether Dan Bias' fingerprints were on the gun because no tests were conducted.	True / False
According to the coroner, Dr. Mihalakis, the bullet entrance wound on Lisa Bias' head was horizontal.	True / False
Dr. Roh's estimate of the muzzle to target distance was 6-8 inches.	True / False
Lisa Bias had never threatened to kill herself prior to the night of her death.	True / False
In the police interview videotape, Dan Bias claims Lisa Bias was holding the gun to her head in her right hand.	True / False
The prosecutor, Bob Russell, claimed Dan Bias got the gun from under the bed right before he shot her.	True / False

Please turn over for more statements

According to her father, Chester Gasrowski, Lisa Bias was left-handed	True / False
According to Police Officer Thomas Walsh, Dan Bias claimed Lisa Bias was standing in front of a mirror when the gun went off.	True / False
Dan Bias first admitted to pulling the gun away from his wife to Police Officer Thomas Walsh.	True / False
In the photograph of Lisa Bias' body presented by Detective John Flynn, the gun is next to Lisa's head.	True / False
Lisa Bias pointed a gun at Dan Bias on the evening of her death.	True / False
The gun used in the shooting was a 357 Colt.	True / False

Civil Trial: Payne vs. Davies (Version 1)

Below are some statements relating to the trial video. Please indicate whether each statement is true or false.

Statement	Please Circle
Diane Davies was on the phone to her husband at the time of the incident.	True / False
Both the prosecution and defence agree that Patty Payne's rear bumper was severely damaged.	True / False
Eyewitness Mr. Smith saw the two cars collide.	True / False
Patty Payne saw Dr. Femur for the first time on July 14th.	True / False
Diane Davies and Patty Payne saw each other in the time between the incident and the court case.	True / False
There was $1400 worth of damage to Patty Payne's car.	True / False
Mr. Smith only looked up at the light to see the colour after the two cars had stopped moving.	True / False
Dr. Femur claims that Patty Payne's surgery and follow-up treatment will cost $35,000.	True / False
Diane Davies suggested that Patty Payne should call an ambulance immediately after the incident.	True / False
When Dr. Femur asked Patty Payne about the history of neck pain, Mrs Payne only mentioned details of the incident.	True / False
Diane was using a hands-free mobile phone at the time of the incident.	True / False
Patty Payne claims Diane Davies took responsibility for the incident at the time.	True / False
Patty Payne spoke to her work colleagues about her neck pain and about the incident.	True / False

Mr. Smith claims he was asleep between 1am and 1:30am the night before the incident.	True / False
The defence points out that Mr. Smith is near sighted, and at 150 feet away would have needed his glasses to see the incident clearly.	True / False
Patty Payne claimed the light was red when Diane Davies went into the back of her.	True / False
Patty Payne saw Dr. Femur within a couple of days of the incident.	True / False
Dr. Femur says the Patty Payne will be able to continue with her life as she did before the incident after she has had surgery.	True / False
Patty Payne and Diane Davies swapped numbers after the incident.	True / False
Diane Davies claims that the collision was only a light bump.	True / False

Civil Trial: Payne vs. Davies (Version 2)

Below are some statements relating to the trial video. Please indicate whether each statement is true or false.

Statement	Please Circle
When Dr. Femur asked Patty Payne about the history of neck pain, Mrs Payne mentioned it was a recurring problem.	True / False
Patty Payne did not speak to her work colleagues about her neck pain and about the incident.	True / False
Diane Davies did not suggest to Patty Payne that she should call an ambulance immediately after the incident.	True / False
Patty Payne saw Dr. Femur for the first time on July 10th.	True / False
Dr. Femur claims that Patty Payne's surgery and follow up treatment will cost $25,000.	True / False
Mr. Smith looked up at the light to see the colour whilst the two cars were still moving.	True / False
The defence points out that Mr. Smith is near sighted, and at 225 feet away would have needed his glasses to see the incident clearly.	True / False
Diane Davis was using a handheld mobile phone at the time of the incident.	True / False
Patty Payne and Diane Davis swapped email addresses after the incident.	True / False
Diane Davis was on the phone to her supervisor at the time of the incident.	True / False
Neither Patty Payne nor Diane Davis took responsibility for the incident at the time.	True / False
Patty Payne claimed the light was green when Diane Davis went into the back of her.	True / False

Patty Payne saw Dr. Femur within a couple of weeks of the incident.	True / False
Diane Davis and Patty Payne did not see each other in the time between the incident and the court case.	True / False
Both the prosecution and defence agree that Patty Payne's tail-light was severely damaged.	True / False
There was $1800 worth of damage to Patty Payne's car.	True / False
Diane Davis claims that it was a severe collision.	True / False
Mr. Smith claims he was asleep between 3am and 3.30am the night before the incident.	True / False
Dr. Femur says that Patty Payne will have permanent impairment to her daily life even after surgery.	True / False
Eyewitness Mr. Smith did not see the two cars collide.	True / False